

RAILWAY

March 1936

TRACK *and* STRUCTURES

One of Five Specialized Railway Age Publications

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ER

s Issue . . .

cks Team Up
h Motor Cars

w to Train
hine Operators

e "Fantastic"
king Needed

hines Take
Track, Too

ments—
e 35

FORMERLY

Engineering and
Maintenance

The Proof of the Pudding



Railroads all over the world are using the Improved Fair as they have found it is the anchor that exemplifies the old saying: "The proof of the pudding is in the eating thereof."

THE P. & M. CO.

CHICAGO - NEW YORK - DENVER - ST. LOUIS - BOSTON - ST. PAUL - WASHINGTON - SAN FRANCISCO - PHOENIX CITY



D7 TRACTOR-NO. 70 SCRAPER ON GREAT NORTHERN ELIMINATES TRAIN HAUL FOR EMBANKMENT MATERIAL

The Great Northern extended two railroad sidings near Dutton, Montana—an industry track 763.6 feet and a passing track 3651.2 feet. Subgrading required moving 10,650 cubic yards of dirt from borrow pit to fill.

At the outset, it appeared that it would be difficult to get enough dirt from the borrow. Plans were made to bring in more than half the yardage by work train. Then the Great Northern put its CAT* D7 Tractor with matching No. 70 Scraper on the job.

Working most of the time without a push loader, the big yellow team was able to get all the dirt needed from the borrow. The work train was not needed, and the Great Northern saved considerable money.

And now the economy of these hard-working off-track Caterpillar units has been increased even more. The new D7 (Series C) has a new 128 HP engine with a drawbar pull of 28,700 lb. maximum. It has Caterpillar's exclusive oil clutch to give you more efficiency than ever. The new clutch increases work life since the constant oil

bath lubrication reduces wear on all moving parts. There is less maintenance—1500 hours without adjustment is not unusual—and no external lubrication is needed.

Many models of Caterpillar-built Scrapers have been given the new, efficient LOWBOWL design which enables you to load more material in less time. In fact, all down the Caterpillar line, new models have been created and new refinements added.

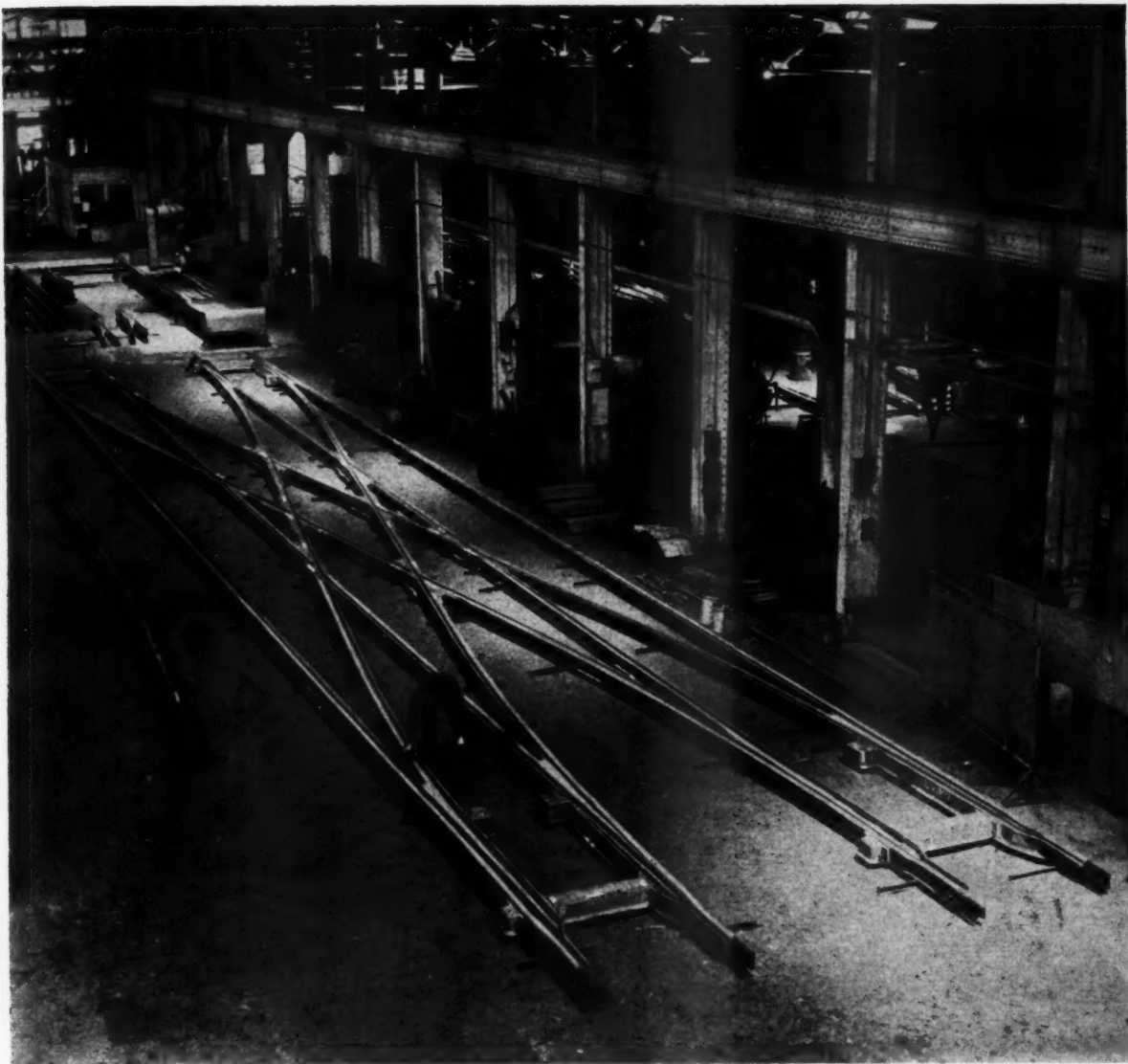
It's time to see your Caterpillar Dealer. He has virtually an entire new line of money-saving off-track equipment to demonstrate—on *your* job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**



What to do about special trackwork problems

They needed a double cross-over for the tight maneuvers of industrial switching. So they went over the problem with Bethlehem engineers and said, in effect, "It's your baby now."

And here's the finished job, being checked for gage on the layout floor of our Steelton, Pa., plant. A typical example of the intricate kind of special work which Bethlehem is so well equipped to handle.

We say well equipped because we could easily fit a few double slips and half a dozen built-up crossings alongside this job without anyone feeling crowded. Well equipped, too, because our long experience in work like this enables us to plan your project, fabricate the com-

ponents, and completely pre-assemble the whole unit with confidence of perfect fitting.

Thus Bethlehem can not only relieve you of special trackwork headaches, but save you money doing it, through elimination of field-cutting, curving and drilling of rails. A Bethlehem engineer will be glad to discuss details and answer your questions. You can get in touch with him through the Bethlehem office nearest you.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
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Ingersoll-Rand

SPOT-AIR

36 cfm

puts you on the

RIGHT TRACK

for low-cost air power



**No other
Portable Compressor
offers you all these
advantages for
"on line" service**

- Completely self-contained
- Delivers full 36 cfm at 80 psi
- Compact—fits 27" x 27" floor space
- Light weight—only 265 lb.
- Ruggedly constructed
- Easily maintained
- Air-cooled

Here you see one Ingersoll-Rand Spot-Air compressor operating four I-R tie tampers on a typical maintenance of way job. With its wheelbarrow mounting, this completely self-contained, gasoline powered compressor can easily be rolled along the right-of-way by one man—keeping close to the work and permitting the use of short, easily handled hose connections.

The Spot-Air is so small that you can set it down just about anywhere—on rough terrain, narrow shoulders, or even in the center ditch with traffic running. What's more, it's ruggedly built to take the punishment expected on railway jobs.

For road-bed work, bridge construction, grade-crossing and signal maintenance—plus a host of other railroad jobs—the Spot-Air is a section gang's best friend! To get the whole story, send for your copy of bulletin 2264-B.



Ingersoll-Rand

2-304

11 Broadway, New York 4, N. Y.

AIR POWER AND AIR TOOLS FOR LOW COST MAINTENANCE OF WAY

THIS CRAWLER TRACK PAYS OUT IN TIME AND MONEY!

LOOK at that Crawler Trail!

..... No other Shovel, Crane or Dragline leaves a crawler trail like that. It illustrates graphically that Northwest crawlers on the larger Northwests give you positive traction *while turning* as well as when going straight ahead.

Positive traction means easier travel on and off the line. It assures the ready negotiation of grades and rough terrain encountered in ditching and trimming banks. It means savings in time and money—it can even mean greater safety when getting equipment off the line.

The Northwest is an "all weather" machine. Positive traction, fully controlled from the cab with the cab in any position, keeps your rig "up on top" and reduces the stresses and strains that cause crawler wear and repair in units that must block or skid one crawler to turn.

This advantage alone, not considering all the other Northwest advantages, makes the Northwest a better railroad machine.

Ask for the whole story.

NORTHWEST ENGINEERING COMPANY
1513 Field Bldg., 135 South LaSalle Street, Chicago 3, Ill.



**DOES
THINGS
NO TRACK-TYPE
RIG CAN DO**

NORTHWEST

THE ALL PURPOSE RAILROAD MACHINE
CRAWLER OR RUBBER MOUNTED SHOVELS
CRANES • DRAGLINES • PULLSHOVELS





Chipman Chemical Company weed killers, brush killers and application service are backed by over 40 years of experience in serving railroads. An extensive line of weed, grass and brush killing chemicals is available to meet varying conditions. Included are the following:

Atlacide	Atlas "A" Arsenical
Chlorax	Atlas "D"
Chlorax "40" • Chlorea	Brush Killer
TCA-Chlorax	Telvar W
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Let us solve your weed problems with the *right* chemicals and application service.

CHIPMAN
Chemical Company, Inc.
Bound Brook, New Jersey

16 Strategically Located Chipman Plants



THE IMPROVED

GAUTIER

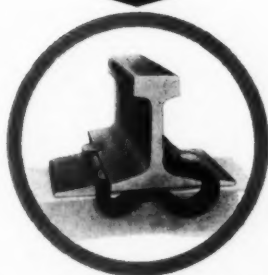
RAIL ANCHOR

any way you look at
it—the outstanding
rail anchor
on the market...

Made of alloy
spring steel, adding
years of life and
usefulness, reducing
maintenance-of-way
costs.

Designed with
sufficient take-up to
be used again and
again on both new
and used rail.

Can be
installed or removed
with maul or spike
maul, and can't be
overdriven.



Write for complete information and folder about this outstanding rail anchor.

Manufactured and Sold exclusively by

MID-WEST FORGING & MANUFACTURING COMPANY

General Offices, 38 S. Dearborn St., Chicago 3, Ill. • Manufacturing Plant, Chicago Heights, Ill.

Distributors: D. V. MAHER, Cleveland, Ohio; MILTON W. ALLEN, Denver, Colorado; JOHN O'BRIEN, St. Paul, Minnesota

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NOW- These in the

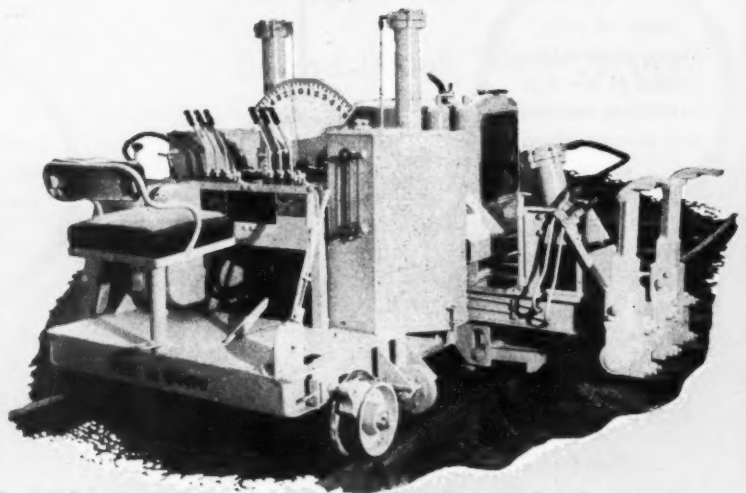


THE KERSHAW BALLAST REGULATOR, SCARIFIER AND PLOW (New Model 2FWG)
Now Comes Equipped With the Following Additional Features:

- * Modified V-type reversible plow on rear of machine, complete with hydraulic raising and lowering mechanism as standard equipment. Controls are mounted in cab within easy reach of operator.
- * New automatic, centralized lubricating system. This system is a push-button type and lubricates 47 points, including the four main drive chains.
- * A new four-wheel hydraulic brake system, complete with vacuum booster kits.
- * Front windshield installed, complete with two electric windshield wipers and blades.
- * Ballast toe line marker now on outside edge of each ballast regulator wing. Marker is adjustable to be retracted if not used, or adjusted to any desired depth.
- * New type 2 1/2 inch axle and 2 1/2 inch demountable hub assembly.
- * Engine hour meter installed on dashboard so regular maintenance cycles may be maintained on machine.
- * Redesigned jack-shaft assembly changed to a 2 1/2 inch shaft, complete with two 2 1/2 inch double roller bearings. These bearings are the same bearings that are mounted on the axles of the machine.

THE KERSHAW JACK-ALL (New Model GB)
Now Comes Equipped With the Following Additional Features:

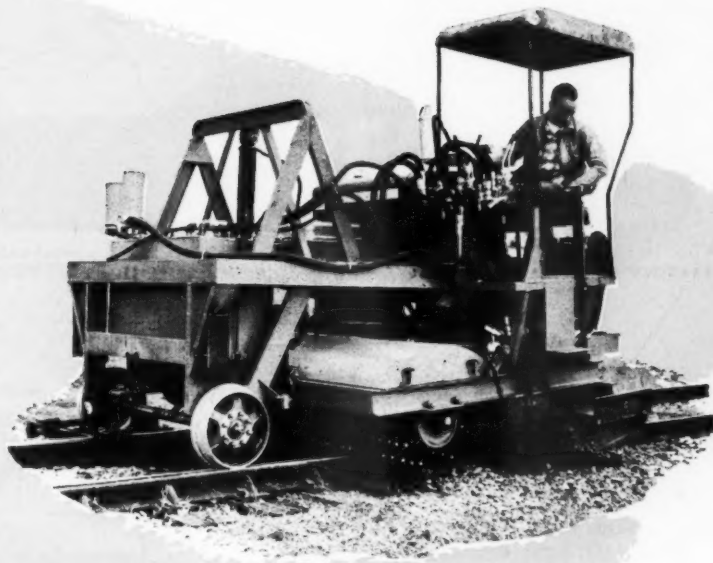
- * A heavier, more substantial main frame.
- * Mounted level board or pendulum level for more accurate cross leveling of track.
- * Steel tubing is used for hydraulic lines with flexible connections to prevent breakage due to vibration.
- * Safer, faster side set-off assembly with side set-off wheels installed on main frame.
- * Electric starter for air-cooled engine.
- * Free wheeling to prevent locking of wheels when hydraulic valves are neutralized.
- * Foot brake and brake lever for locking brakes when machine is parked.
- * Self-propelled.
- * Twin tamping feet mounted on each side to tamp two ties simultaneously. Removable to enable tamping of only one tie when desired. Each with hydraulic control and operated by reciprocating hydraulic ram.
- * One-Man Operated.
- * Automatic, self-adjusting rail dogs which engage rail as jacking begins.



IMPORTANT NEW FEATURES LATEST KERSHAW MODELS

THE KERSHAW TRACK BROOM (New Model 1FBE) Now Comes Equipped With the Following Additional Features:

- * Continental Model F-226 engine giving an increase in horsepower to 63 hp. The new engine incorporates a special adapter flange for direct coupling of the hydraulic pumps to one side of the front of the engine.
- * Redesigned steel cable brush to reduce cable breakage and to facilitate maintenance of brush wheel. A new type cable clamp mechanism also has been included so that cables may be replaced in a minimum of time by loosening only one bolt and nut.
- * Generally redesigned machine making the unit a more stable and substantial machine. Redesigning includes many minor improvements as well as added power to each working mechanism.
- * Four-wheel hydraulic brakes with vacuum booster.
- * Sixteen inch cast steel demountable wheels.
- * Change in operator's position for better visibility and more comfort.
- * Seamless steel hydraulic tubing has replaced some hydraulic hose assemblies to reduce maintenance required on hydraulic system.
- * Small canopy to protect operator from bad weather.



Continuous improvement in our products — that's another of the progressive policies we're proud of at Kershaw Manufacturing Company . . . When you, America's railroad men, suggest ANY improvement in ANY Kershaw machine — any improvement or addition which will enable you to do a better track maintenance job — our research and engineering department goes to work immediately. . . . These new Kershaw models incorporate many of your suggestions. We're proud to present them to you.

Now . . . more than ever . . .

*Recognize This Symbol
of Leadership . . .*



YOU'RE CLOSER TO **LINDE** THAN YOU THINK

Trade-Mark



New materials, changing structural requirements, and unexpected emergencies create railroad problems that demand skill and experience . . . LINDE's coast to coast organization of engineers, service representatives, and salesmen in the offices shown on this map, stand ready to help you meet all such problems.

Backed by more than 40 years of accumulated know-how, and equipped with unmatched research and engineering facilities to help customers solve metal-working problems, LINDE is helping the nation's railroads to consistently improve production and lower costs.

*These are "PLUS" values you get only from **LINDE***

RAILROAD DEPARTMENT
Linde Air Products Company
A Division of Union Carbide and Carbon Corporation

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Division of Union Carbide Canada Limited, Toronto
(formerly Dominion Oxygen Company)

"Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol - - -



Look

NO WEEDS!



UREABOR*

WEED and GRASS KILLER

kills weeds—

prevents regrowth!

One application—*DRY*—may keep soil bare for 1 or 2 years!

Here's new UREABOR... a ready-to-use weed killing compound so powerful that only 1 to 2 lbs. can destroy most types of vegetation in an area of 100 square feet! And control continues effective for long periods because UREABOR maintains its plant-destroying activity in root zones. Such low application rates mean greater convenience... less storage space for material. You'll say it's great!

Because of its granular form, UREABOR Weed Killer is easily broadcast by hand for spot treatments. Larger areas are more efficiently treated by using a mechanical spreader. For most effective distribution of the small amount of material required, we created an inexpensive, handy spreader especially for UREABOR Weed Killer.

Special Spreader now available...

The PCB Spreader applies UREABOR to best advantage, at prescribed low rates. It holds enough UREABOR to treat 1250 to 2500 sq. ft. without refilling—weighs a mere 6 lbs. Available now for just \$10.75 delivered—anywhere in the U.S.A.

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PACIFIC COAST BORAX Co.

DIVISION OF BORAX CONSOLIDATED, LIMITED

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**LOW RATE OF APPLICATION—
EFFECTIVELY DESTROYS WEEDS AND GRASSES
NOTHING TO MIX—NO WATER TO HAUL
NONCORROSIVE • NONFLAMMABLE**

*UREABOR is a trade-mark of
Borax Consolidated, Limited

MANUFACTURERS OF FAMOUS "20 MULE TEAM" PACKAGE PRODUCTS

RAILWAY TRACK and STRUCTURES

MARCH, 1956

9

Fast, Economical Trestle Construction with Armco Steel Pipe Piling

Steel Pile Trestle Construction

**SAVES TIME
SAVES FORMWORK
SAVES MATERIALS**

The three structures illustrate some of the advantages of trestle construction with Armco Steel Pipe Piling. See how the Armco Piling helped solve both engineering and construction problems.

On-track equipment drives Armco Piling to replace an obsolete structure near Golden Gate, Illinois. There was no need to divert the stream or de-water the site. Cast-in-place Armco Pipe Piles stay water-tight under the impact of driving. Water is no problem.



Formwork is held to a minimum, time and materials saved. Here forms are being placed on pile bents for viaduct over new yard in Chattanooga, Tennessee.



Armco Pipe Piles have gained wide acceptance for trestle construction. This is the retarder bridge for a new yard in Houston, Texas. The foundation presents a minimum resistance to stream flow, has few structural members to pile up debris. And the wide range of diameters and wall thicknesses makes it easy to specify your exact needs.



Write us for complete data. Armco Drainage & Metal Products, Inc., 4086 Curtis Street, Middletown, Ohio. Welded Pipe Sales Division. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.



ARMCO PIPE PILING

1931 ◀ 25 CONSECUTIVE YEARS ▶ 1956

MODERN BALLAST CONDITIONING



BEFORE "R. B. C. C." Service



AFTER "R. B. C. C." Service

"R. B. C. C." ballast cleaning service has earned its outstanding performance record from 25 years of successful operation. Our 3 and 5 unit trains are entirely self contained on our own standard railroad equipment—No railroad cars are used or tied up.

"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

"R.B.C.C." 3 unit equipment, self propelled, does a thorough ballast conditioning job, cleaning one shoulder at one pass on one side only.

"R.B.C.C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.



RAND TOWER
MINNEAPOLIS, MINN.

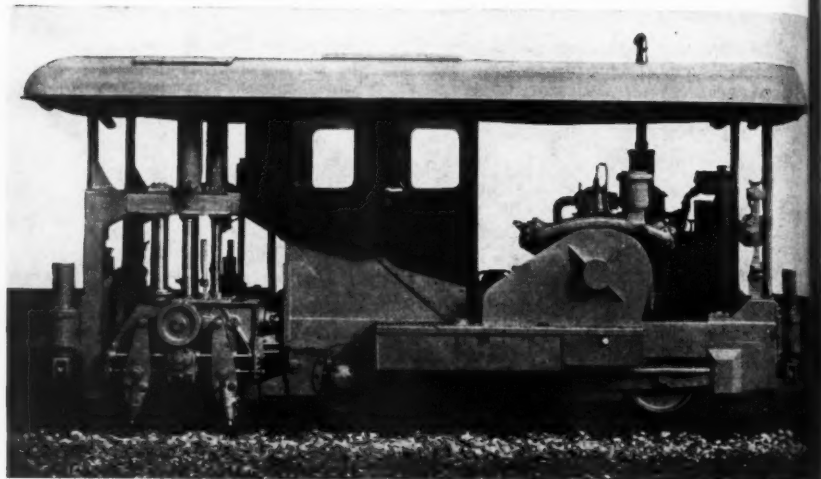
**RAILWAY
BALLAST CONDITIONING
CORPORATION**



METROPOLITAN BANK BLDG.
WASHINGTON, D. C.



B-24 TAMPER



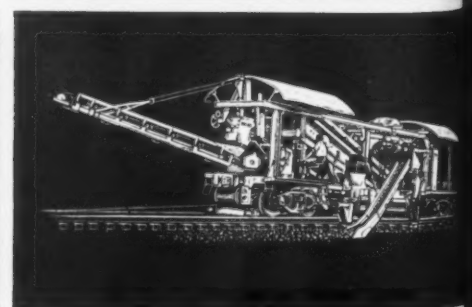
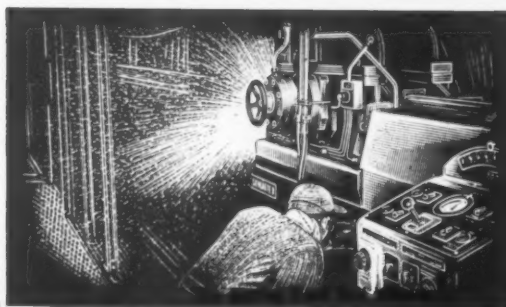
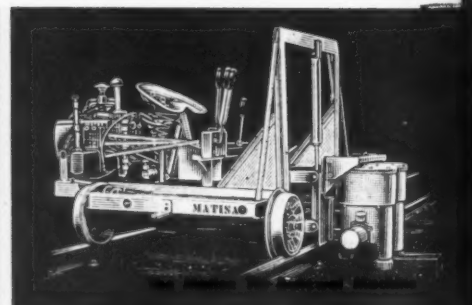
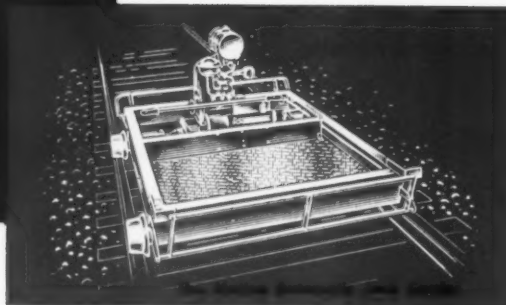
NOW... EASIER THAN EVER TO HANDLE

Pneumatically assisted operating controls have been added to increase production and assure uniform tamping.

NOW... MORE ECONOMICAL TO MAINTAIN

Advanced type of oil clutch installed in a power transmission system of the most modern design improves performance and reduces wear.

For more information see page 203 of the 8th Edition of Railway Track & Structures Cyclopaedia or send for literature.



Matisa

EQUIPMENT CORPORATION
1620 WASHINGTON AVE. - CHICAGO HEIGHTS, ILLINOIS

News Notes

... a resumé of current events throughout the railroad world

RAILWAY

TRACK and STRUCTURES

MARCH, 1956

George Alpert, a Boston attorney, has been elected president of the New Haven. He succeeds Patrick B. McGinnis who has resigned. Shortly after his resignation, Mr. McGinnis was elected president and a director of the Boston & Maine.

A general demand for an increase of \$3 per basic day for train-service employees, yardmen, including yardmasters, and dining-car stewards, is expected to be served by the Brotherhood of Railroad Trainmen.

A wage increase of \$34 per month has been agreed upon for some 4,000 dispatchers by the American Train Dispatchers' Association and various railroads. The wage increase includes \$6.80 in lieu of a carrier-financed health and welfare plan.

The Railroad Labor Executives' Association has decided to seek, from this session of Congress, legislation to increase benefits 15 per cent under the Railroad Retirement Act.

Sixty-five billion dollars would be required to replace the railroads on the basis of 1954 spot prices, according to the Interstate Commerce Commission's Bureau of Accounts, Cost Finding and Valuation.

Revenues of the railroads amounted to only 3.2 per cent of the national income in 1954, compared with 5.6 per cent in 1939, according to the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission.

Through simplification and standardization of design, lightweight trains can be mass-produced, thereby greatly reducing their cost, said J. L. Swarner, electrical engineer, Pullman-Standard Car Manufacturing Company, in an address before the American Institute of Electrical Engineers.

The Rock Island's "Jet Rocket" went into regular operation between Chicago and Peoria on February 11, thus becoming the first of the new low-slung lightweight trains to go into revenue service. The train will make two round trips daily between the two cities which are 161 miles apart.

The Interstate Commerce Commission has denied a petition of the Department of Justice to the effect that it reconsider its decision of last year, dismissing federal government reparations claims against railroads for alleged overcharging during World War II. The amount involved in the claim was estimated as high as \$2 billion, but the official guess of the Justice Department put it at "about \$475 million."

Modification of the two "Aerotrains" of General Motors was expected to be completed late last month. The plans were for the New York Central train to go to the Santa Fe for a "railfan" trip from Chicago to Los Angeles, March 1, after which it will be further tested by various western railroads. Meanwhile one car from each ten-car "Aero train," has been returned to GM's Electro-Motive division at La Grange, Ill., for further engineering studies and tests.

NOW *bid beating...* 1956 *dirt heaping...*

10% bigger payloads!

Model "75" ... boosted to 20 yds heaped (without sideboards) ... 262 hp.

Model "55" ... boosted to 14 yds heaped (without sideboards) ... 172 hp.



Wide-base tubeless tires and windshield, shown, available as optional equipment.

1 Wider "Target" Push-Block makes it easier to make and maintain contact. Helps to cut loading and cycle time.

2 Straight-Line Ejector Reeving requires minimum power; leaves more power on Payscraper wheels for faster dumping and spreading. Also speeds re-threading time.

3 Sturdy Cover Plates protect new, stronger cylindrical ram and air tanks.

4 New, Straight-Back Bowl lets you heap and haul more dirt every trip. Struck capacity, with sideboards. 18 cubic yds on "75"—12 cubic yds on "55".

5 Higher Apron Lift, bigger apron opening, provides cleaner, more rapid dumping, especially of "sticky" materials.

6 Fast-Acting Apron, arms mounted outside bowl, assure quick, positive closing of apron. Payscraper holds the load from cut to fill.

7 Lowered Draft Frame provides operator with "control tower" visibility of bowl and push-tractor ... also helps direct push and pull power more efficiently to cutting edge for faster loading.

8 Larger, Wider Fenders give greater safety for operator, greater protection for machine.

52°
Max
Oscil
from
the s
out o
rows

6 International Payscrapers®



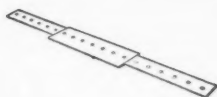
Put the 1956 International Payscraper to work on your job, and watch dirt boil up into its new, straight-back bowl. You've never seen any big scraper load as easily or as fast. In seconds, you've packed in up to 23 heaped yards. Its offset 3-section blade breaks the ground like a sharp-pointed spade. Dirt boils from the smooth-slicing cutting edge and fills the corners to build a full heaped load. Close the apron instantly, positively, on this huge, well-compacted load and you carry all the dirt you've heaped in.

Now, drive easily, effortlessly with safe hydraulic power steering at a fast clip to the fill. Note how the 1956 Payscraper's extremely high ratio of horsepower to capacity and its rapid acceleration to 24 mph top speed add up to more trips per hour than any other self-powered scraper you've ever used. Yes sir, it's a real profitable dirtmover, this 1956 Payscraper! Try one yourself on your job! See your International Industrial Power Distributor for a demonstration.



New, Long-Lasting Clutch

of ceramic material and powdered metals, successfully resists heat and wear over longer periods. Available on Model 75 only.



Adjustable 3-Piece Cutting Edge

for clean, fast cutting and loading under all soil conditions.



Maximum 52° Oscillation

from right to left takes the stress and strain out of hauls over furrows, rough ground.



International Industrial Power

INTERNATIONAL HARVESTER COMPANY, 600 N. Wacker Drive, Chicago, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors... Self-Propelled Scrapers and Bottom-Dumps... Tractor and Rubber-Tired Loaders... Diesel and Carbureted Engines... Farm Machinery... Motor Trucks.





"Of course, our berm is clean!"

Dow products aid smooth
over-the-road operation by keeping
roadbeds vegetation-free

A conductor's pride in his line goes clear down to the roadbed. He knows that it's smooth and safe, that the ballast and berm are clean. It's just another part of sound railroad management. Odds are, however, he would be surprised at the time, the planning and the amount of Dow chemicals that go into keeping vegetation under control.

But the maintenance-of-way man is different. It's his job. He knows the time and planning involved and how much he depends on Dow weed, brush and grass killers to maintain mile after mile of clean ballast and berm. He knows that they are vital to keeping right-of-ways free of hazardous, unsightly weeds and brush. He knows one sure way to keep service up and operating costs down is to build a low-cost spraying program around five special-purpose Dow vegetation control products.

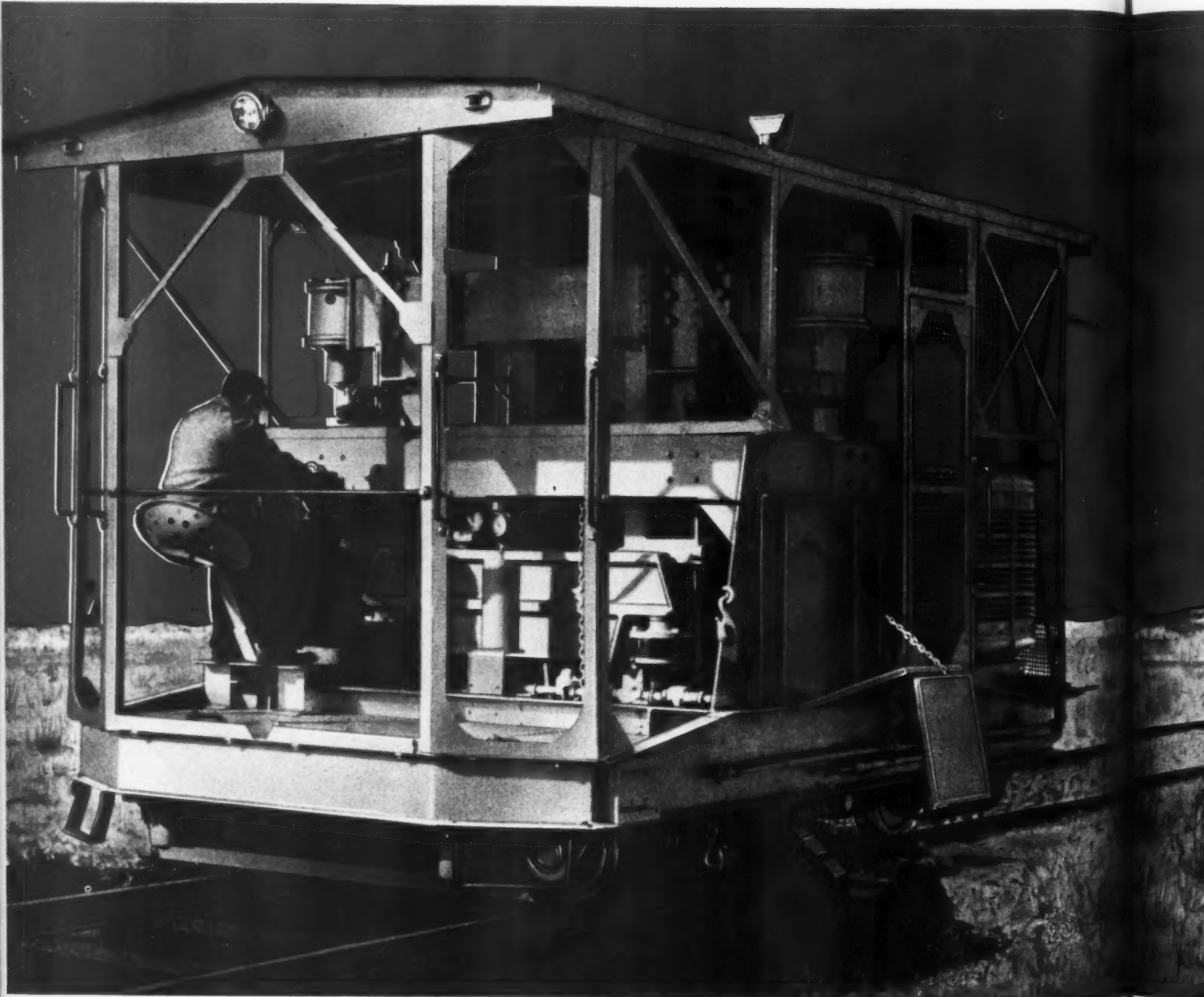
Write for information on Radapon, containing Dalapon Sodium Salt . . . 2,4-Dow* Weed Killer, Formula 40 . . . Esteron® Brush Killer . . . Esteron 245 . . . Esteron Ten-Ten*. Technical service and assistance are available. THE DOW CHEMICAL COMPANY, Agricultural Chemical Sales Department, Midland, Michigan.

*Trademarks of The Dow Chemical Company.

you can depend on
DOW AGRICULTURAL
CHEMICALS



PULLMAN-STANDARD



Pullman-Standard Power Cribber—

The Pullman-Standard Power Track Cribber gives two cribs a minute with a single operator. With a normal production rate of 150 to 400 track-feet per hour, its interchangeable 4-, 5-, and 6-inch digger tips enable it to crib efficiently and economically, regardless of cementation.

Pullman-Standard Power Ballaster—

With a production rate of 500 to 700 feet an hour, a Pullman-Standard Power Ballaster, run by a single operator, can be efficiently manned by a crew of 10 to 15 men. Case history studies made on 16 railroads prove that this unit will give more feet of finished tamped track per hour, with less labor and maintenance, than any other production tamper.

Pullman-Standard Power Cleaner and Winch Car Team—

For the first time both track shoulders can be cleaned simultaneously at 1000 to 1200 feet per hour with only four men. Even in multiple track territory, the shoulder plus half the six-foot are cleaned to a depth of eight to ten inches below the tie base at the same high rate and with the same low labor complement. Your ballast cleaning costs can be reduced by as much as 50%.

POWER CRIBBER

- 100-400 feet of finished cribbed track per hour.
- From loose sand and cinders to cemented rock, no ballast is too tough.
- Will clean cribs down to 4 inches in width.
- Adjusts to varying rail heights, digging depths.
- Operated by one man.
- Eliminates costly hand labor.
- Due to special clearance features, can be used to crib and lower track in tunnels and along station platforms.
- Designed for rugged service, easy maintenance.
- Cribs at 8 to 30 cents per track foot.
- PS Cribbers sold in the 1930s are still in service.

Pullman-Standard can give early Track Equipment delivery, well in time for this work season. We will be pleased to give you complete information on better, faster, lower cost mechanized track maintenance with Pullman-Standard Track Equipment. Just write or phone the Pullman-Standard office located nearest you.

YOUR NEEDS CREATE THE PULLMAN "STANDARD"

PULLMAN-STANDARD

CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

75 EAST ADAMS STREET, CHICAGO 3, ILLINOIS

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON



Get Rid of Slow Orders - in a Hurry

... use the mobility of Le Roi Tractair and the easy holding of Cleveland Tampers, to tamp your bad sections faster

LE Roi's Tractair unit is an off-track compressor-tractor that has good traction and low center of gravity. It readily crosses or straddles heavy-duty rail. It climbs embankments and works on a two-to-one slope with safety. That's why Le Roi Tractair can take air power anywhere, can provide you with a quick, easy way of getting rid of slow orders caused by bad sections of track.

And, since the Tractair unit compressed-air output has been increased from 105 cfm to 125 cfm you can handle four, easy-holding, Cleveland C10T, heavy-blow tie tampers, with air power to spare. The fast, hard-hitting blow, and easy-holding quali-


ties of the Cleveland machine help your section hands do faster, more uniform work.

And Tractair can do many more jobs besides tamping — such as driving spikes, breaking pavement, driving moil points for grouting, powering earth augers, ditching, light grading, weed mowing, stockpiling ballast, cinders, etc., handling off-season work for B&B, Signal, T&T, and Water Service Departments.

Get all the facts on this redesigned Tractair with its increased power. Write our Railroad Sales Department, 327 South LaSalle Street, Chicago 4, Illinois, or to us for our latest bulletin.

T-37

LE ROI

 *Division of Westinghouse Air Brake Co.*

Milwaukee 1, Wisconsin



AMCRECO

PRESSURE

TREATMENT means Longer Service Life Reduced Maintenance Costs

In Amcreco cross ties, bridge timbers and piles, Lowry Process Pressure Treatment makes the big difference. The natural strength of the wood is preserved to assure long dependable service.

That's why Amcreco Products stand up for extra years under the ever increasing pounding of high speed rail traffic — have increased resistance to the effects of climate, insects and fungi. For lower overall costs and reduced maintenance, it will pay you to specify Amcreco next time.

Amcreco

Lowry Process
**Creosoted
Products**

- Adzed and Bored Cross Ties
- Bridge Ties
- Timbers
- Plank

AMERICAN CREOSOTING COMPANY

Shreveport Creosoting Company
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Indiana Creosoting Company



Georgia Forest Products Company
Gulf States Creosoting Company
Georgia Creosoting Company
Kettle River Company

LOUISVILLE 2, KENTUCKY

12 FIELD SALES OFFICES TO SERVE YOU

How to get long-lasting control of vegetation on right-of-ways and in yards...



Note how "Telvar," used in combination with other herbicides, has helped to keep the road-bed area free of vegetation.



Brush along right-of-way was controlled with "Ammate." Note the leafless dead stems of brush in this photograph taken 90 days after application.

Du Pont TELVAR® Weed Killers, used separately or in combination with other herbicides, provide long-lasting weed control that can help cut your maintenance cost to new low levels.

"Telvar" not only kills vegetation, but also prevents regrowth because of its season-long residual action.

"Telvar" weed killers come as wettable powders, are non-corrosive, non-flammable, non-volatile, low in toxicity to humans and livestock.

For weed control on right-of-ways and in yards, include "Telvar" weed killers in your program. Railroad custom applicators are prepared to apply "Telvar" weed killers alone, or in combination with other herbicides, either as sprays or in dry form.

• • •

Where brush is a problem, either Du Pont AMMATE® X Weed and Brush Killer or "Ammate" solution is the product you need. "Ammate" kills more kinds of brush with unusual safety. With ordinary precautions, it may be used close to such crops as cotton, tomatoes, soybeans, peanuts and others.

For free illustrated booklet (A-995), or if you would like to have a Du Pont representative call, write Du Pont, Grasselli Chemicals Dept., Wilmington 98, Del. In Canada: Du Pont Company of Canada Ltd., 80 Richmond St. W., Toronto.

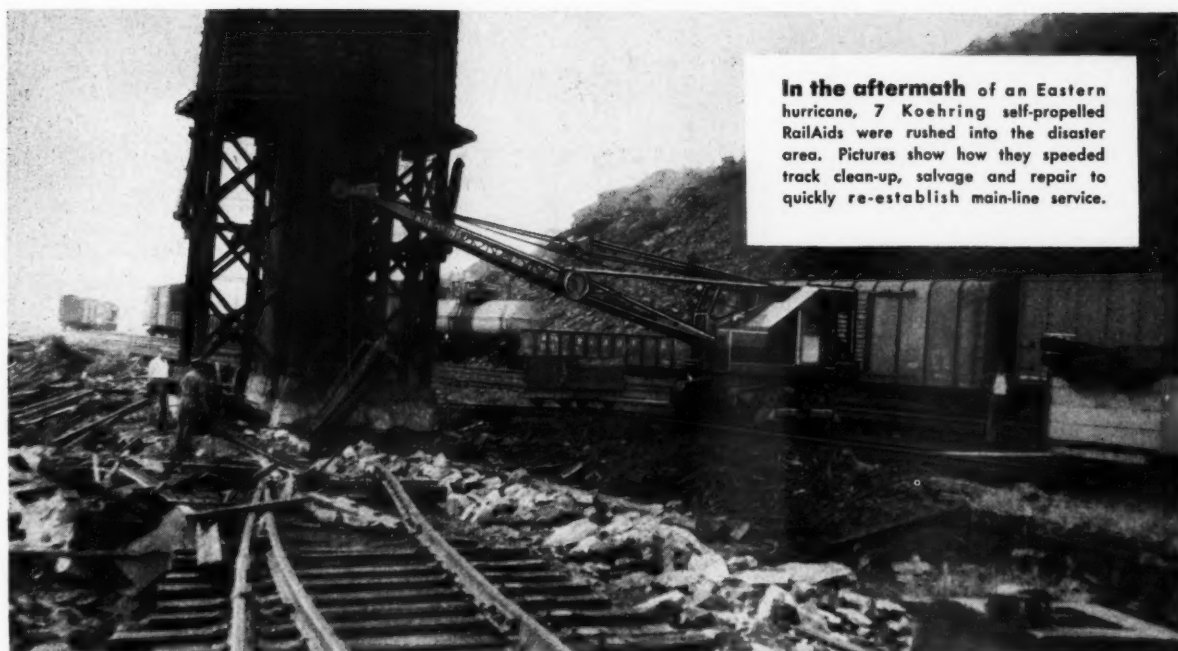
On all chemicals, follow label instructions and warnings carefully.



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

WEED and BRUSH KILLERS

RAILWAY TRACK and STRUCTURES



In the aftermath of an Eastern hurricane, 7 Koehring self-propelled RailAids were rushed into the disaster area. Pictures show how they speeded track clean-up, salvage and repair to quickly re-establish main-line service.

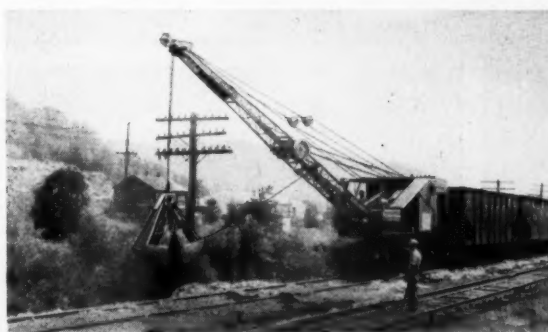
Repairing HURRICANE FLOOD DAMAGE



Cargo salvage — Shipments had to be rescued in a hurry. RailAid crane removed bales of unprocessed wool from wrecked box cars, transferred them into gondola cars, and, later, into trailer trucks. By this quick action delivery was completed without spoilage.



Ties, rails, drainage pipe were quickly reclaimed, and put back into use. RailAids loaded ties on ballast boxes, moved on-track, towing rails, materials and supplies, re-laid rail — worked round-the-clock to open main line for regular service in record time.



Washouts and landslides knocked out 500-foot sections of track in some places. Here, a Koehring 205 working on its own rail-propulsion car fills ballast along a weakened double-track section. Another RailAid is working off-track behind the gondola cars.



On and off-track flexibility was an important factor in the disaster clean-up. Where track was blocked, RailAids took to high ground, worked and traveled off-car. Read all about it in the latest RailAid bulletin. Write to Koehring Co., Milwaukee 16, Wis.

K659

KOEHRING



RailAid®

Subsidiaries: PARSONS
KWIK-MIX & JOHNSON

An Important Message For Our... SEVENTY-SIX MAJOR

You have proved the dollar-for-dollar value of the Aladdin Lubricator on short curves, frogs and switches.

You have told us that this sturdy grease lubricator gives excellent service in all climates, with little or no maintenance.



The **ALADDIN**
Rail Lubricator

\$195⁰⁰

delivered anywhere

You have liked its simple installation which takes but one-half a man-hour.

And your hundreds of repeat orders confirm your satisfaction with its performance.

H. T. KENNEDY COMPANY, INC.

RAILROAD CUSTOMERS



NOW... we are pleased to announce the availability of the ALADDIN Lubricator's big brother—the HURCOL. You will find the HURCOL excellent for both short and long curves . . .

- Operates at any speed
- No rail drilling or other rail preparation
- Installed by two men in one hour
- Outside or inside rail installation
- No wear—no contact between wheels and lubricator
- Uses standard grease—is easily refilled
- Lubricates three miles each way
- Output easily adjusted
- Pump readily accessible and removable
- Has automatic "empty" indicator
- Guard rail applicators available

The
HURCOL
Rail Lubricator

\$392⁰⁰

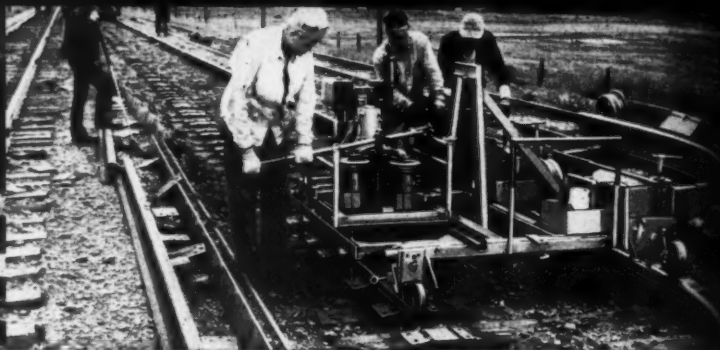
with two applicators
delivered anywhere

ARRANGE NOW FOR A
30-DAY FREE TRIAL
TEST—Any railroad
maintenance or oper-
ating executive may
test the HURCOL and
ALADDIN Lubricator
at our expense. Write
us for details...

12 WALL STREET - New York 5, N. Y.



CRIBEX® . . . Employing an endless chain of digging flights, the Cribex removes material contained in the cribs and deposits it beyond the ends of the ties. It leaves a smooth and uniformly graded crib floor, completely emptying crib without damage to ties or rails.



DUN-RITE® GAGING MACHINE . . . Fast and accurate, the Dun-Rite base gaging method fastens the tie plates to the tie in exact position so that when the rail is placed the head to head gage is correct.

in 1956 . . .

make your track maintenance dollars
go farther by lowering costs
with **NORDBERG MACHINES**

For improved track maintenance in 1956 . . . these are the Nordberg "Mechanical Muscles"® you need to do the *best quality job . . . faster . . . at big savings.*

Investigate the full line of Nordberg track maintenance machinery which has been designed, built, fully tested and proved in use with the cooperation of railroad men. These machines have revolutionized track maintenance methods in scores of operations. Write for literature giving complete details on any or all of these "Mechanical Muscles".

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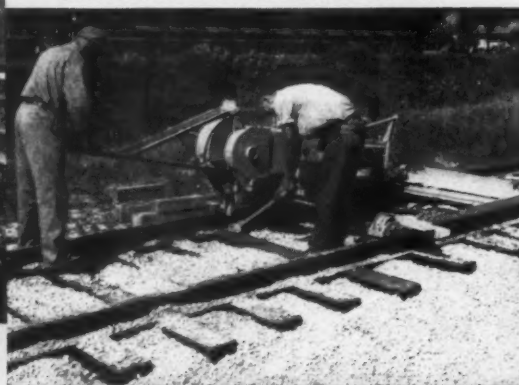
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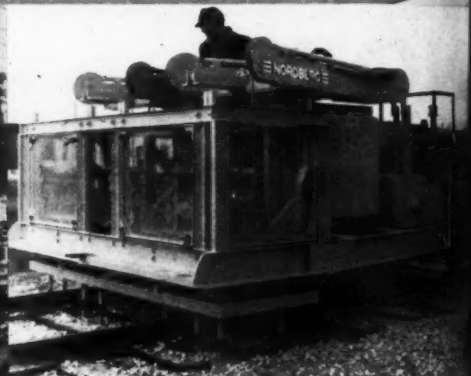
HYDRAULIC SPIKE PULLER . . . Simple, versatile machine for tie removal, switch and bridge timber jobs—quickly and economically pulls spikes on either rail.



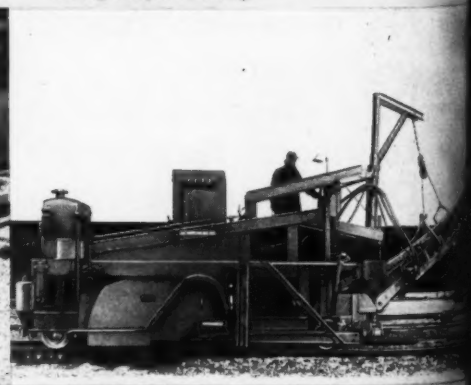
GANDY—TIE PULLER AND INSERTER . . . A multi-purpose self-propelled, on-track machine that pulls old ties—inserts new ties—loads old ties, sets machines on or off track—hauls and distributes new ties.



SPIKE HAMMER . . . A power machine that drives spikes straight and to correct depth. One machine can drive 800 spikes per hour.



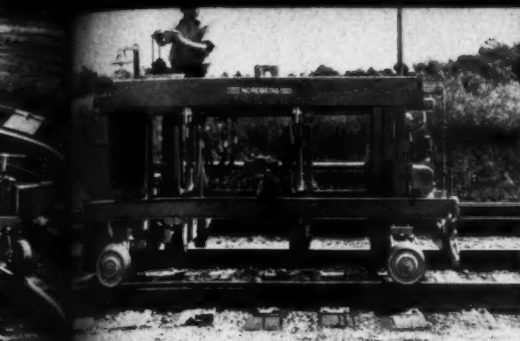
AUTOMATIC GANG TAMPER . . . Operated by one man, this machine assures uniform quality tamping of every tie, every time, in any ballast, whether raising or spot surfacing.



DSL® YARD CLEANER . . . A self-contained, self-propelled machine that cleans more track faster, better, more economically . . . without damaging ties.



NORDBERG MFG. CO.



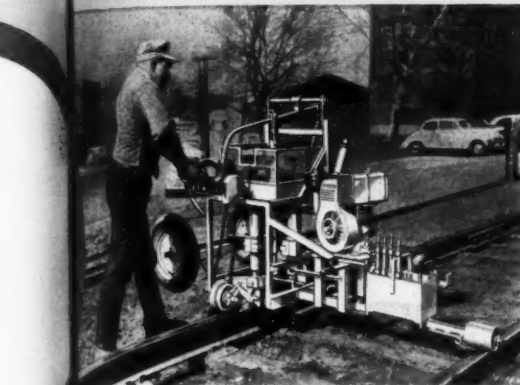
TRAKLINER . . . A self-propelled machine for faster, more accurate track lining in raising, spot surfacing, new work or improvement programs. One man and a machine do the work of 14 men or more.



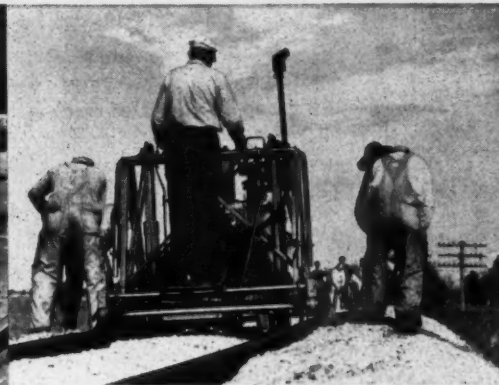
BALLAST ROUTER . . . Easily and quickly removes high crib ballast, improves track drainage, and simplifies application of rail anchors.



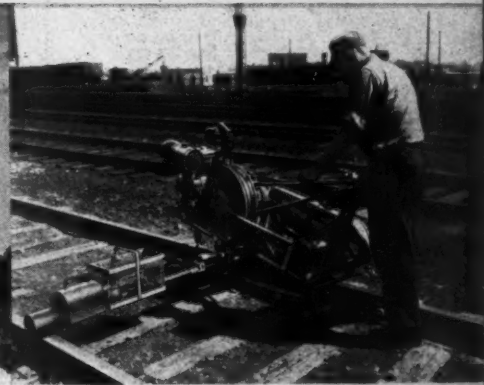
ADZING MACHINE . . . Properly prepares tie seats in keeping with today's track maintenance standards. Adzer is easily operated and adjusted without tools. All tie seats are uniform and in same plane.



TIE DRILL . . . For speeding rail laying, reducing field tie drilling costs and increasing life of ties . . . drills 2 holes at once in less than 3 seconds per hole.



POWER JACK . . . Speed, accuracy and ease of handling on or off the track are advantages of this machine for rebalasting, general surfacing and all other operations involving raising of track.



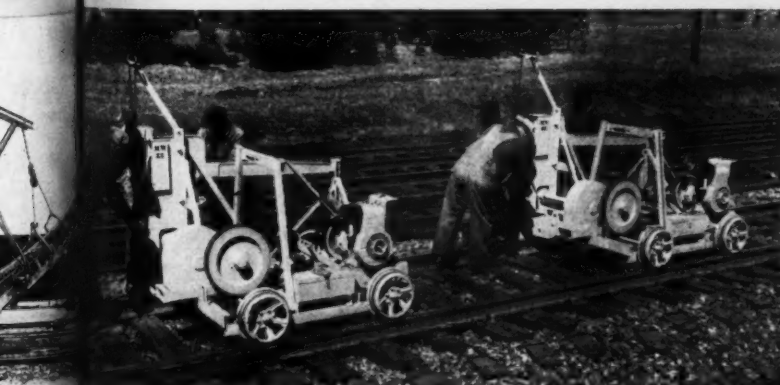
POWER WRENCH . . . Provides uniformly controlled tightening of track bolts. Machine is operated by one man and is ruggedly built to take hard service, yet light in weight to be easily handled off and on the track.



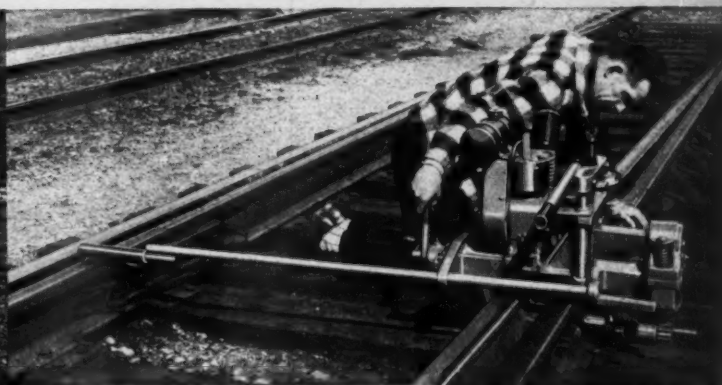
BALLASTEX®—SCREENEX® . . . A fast, economical machine combination that excavates ballast between tracks or on shoulder, cleans and returns it to track, intertrack, or shoulder.



RAIL GRINDERS . . . For reconditioning rail, switches, frogs and crossings, Nordberg builds four types of grinders. In this selection you will find the grinder best suited to your requirements.



MECHANICAL SPIKE PULLER . . . Three men and machine easily pull from 30 to 45 spikes per minute, speeding up relaying and reducing the cost of the entire operation.



RAIL DRILL . . . A compact, lightweight 1 1/4 hp drill that is easily set up and adjusted for accurate work and easily moved from job to job. Self-tightening chuck is simple and the bit is positively held.

Milwaukee, Wis.

NORDBERG

"Mechanical Muscles"®



Subject:
Dear
Readers:

RAILWAY

TRACK *and* STRUCTURES

Schools of Thought

"Why don't you publish more articles on controversial subjects," we were asked the other day by a prominent railway supply man. This question, and the ensuing conversation, started an interesting line of thought which gives no indication as yet of coming to an end. Let's see what has developed so far.

The first thing we find is that you can't talk about this subject without bringing progress into the discussion. Maintenance-of-way practices are moving forward on a broad front toward the goal of greater efficiency. This progress is the result of the collective effort of many organizations and people—railroads, supply companies, associations, and individuals—for the most part working independently of each other. Some are spurred by a greater incentive than others. Some have only meager resources behind them, while others have at their disposal ample funds and scientific talent and equipment.


This situation is bound to result in uneven progress; the front moves forward here and lags there. Progress in different sectors may be along parallel lines or it may diverge, and that is where controversy, or differences of opinion, enter the picture. People naturally are inclined to favor their own devices or methods as against those developed by others, even in situations where there is no financial gain for them. However, even though the people working for progress may differ as to the form it should take, they are agreed on one point—that progress itself is imperative and fundamental.

We now come to the situation that occurs when two or more divergent practices become established and are accepted, each by a different group of individuals or roads. We then have what are called "schools of thought." For instance, one school holds that it is practical and desirable to build up driver burns by welding; another asserts just as strongly that this is an undesirable practice. There is one school that favors so-called "cycle" maintenance and another that denounces it. There is a school that embraces continuous welded rail and one that refuses to accept it, and so on and on. Railroad men differ over big things and little things. You can draw up your own list and you will be surprised how long it will be.

In some cases these differences of opinion can be traced to variations in local conditions. But if this fact were to be eliminated—in other words if conditions were assumed to be uniform on all roads—it would be a safe bet that major differences in opinion would continue to prevail. We can explain these partly on the basis that there may be different ways of doing the same thing with equally good results. But we wonder how often personal prejudice is the determining factor in molding opinion.

Let's face it. We all belong to "schools of thought." We all have personal prejudices in sports, in politics, in national affairs and in other fields—prejudices that are based on emotional thinking rather than on facts as they are. Having accepted the concept of being in "school" cannot we go a step further and agree that it is also possible to advance from one "grade" to another. Let's think about it.

MHD



THE NO. 12...

WORKHORSE OF THE OFF-TRACK FLEET ...RESTORES BANK FOR THE SANTA FE

When the Santa Fe had important miles of bank to restore between Fresno and Hanford, Calif., it naturally assigned a big, versatile CAT* No. 12 Motor Grader to the job.

For railroads through the years have continually benefited from the all-around efficiency of this big Caterpillar unit—ready to tackle *and finish* almost any off-track job.

Besides shaping embankment, it is used for eliminating irregular fill, controlling brush, policing the yard, sloping fills, taking up track, pulling ties, and clearing snow.

In addition to traditional Caterpillar ruggedness and freedom from down time, the No. 12 now has two important new features for even higher production at lower cost on *your* operation:

NEW TUBELESS TIRES. Available at no extra cost, they eliminate an estimated 80% of down time caused by tires. Tubeless tires are easier and quicker to mount, hold air longer, run cooler, and give better puncture and blowout protection.

MONEY-SAVING OIL CLUTCH. Special cork facings are bathed in oil for cooler operation, less fade, longer life.

Facings wear an average of only $2\frac{1}{2}$ thousandths of an inch per 1000 hours of operation, can give you up to 1500 hours without clutch adjustment.

Your operators will like the new simplified starting from the operator's seat and the fact he can change speeds without changing throttle setting by using accelerator-decelerator pedals.

Your nearby Caterpillar Dealer will demonstrate these versatile, profit-making units on any job of your choosing. Call him soon. See for yourself how the new No. 12 will give you even greater production at lower cost.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**99% OF ALL CAT
MOTOR GRADERS EVER
BUILT ARE STILL IN USE**

One off-track rubber-tired

does the work of 3 trucks, 1 dragline

Builds earthfill causeways to replace wooden railroad trestles

When the Valdosta Southern Railroad decided to replace wooden trestles with easier-to-maintain earthfill causeways, company officials contracted all dirtmoving to the Jimmy Miller Construction Company, Valdosta, Georgia.

One causeway, a mile long, involved moving 27,000 yards of sandy clay fill. To move this dirt Jimmy Miller drove one self-powered, 7-yard D Tournapull, to the site of the trestle, near Pinetta, Florida. This trestle spanned a river, plus about a mile of very rough terrain. Except for a brief length crossing the river, none of the trestle track was carried more than 15 feet above the ground.

"D" went right to work spreading fill next to this trestle. When side fill reaches track-level, "D" fills center through the spacing between the ties. Then, trestle timbers, stringers, and ties are removed ... and tracks are relaid on the newly-placed earthfill.

This method of trestle replacement has been recently adopted on the Valdosta Southern. The first time it was used, a job that was expected to take three weeks, was completed in just four days. This makes for a very inexpensive replacement that permanently eliminates expensive structural maintenance.

1100' cycles take 2 minutes

When time studies were taken on the illustrated operation, "D" on 1100-foot cycles, was delivering a heaping load every 2 minutes.



Push-loaded by a 66 hp crawler, "D" loaded sand up an 8% grade in 31 seconds. Hauling 500 feet, over a soft, rough haul road, took about 35 seconds. Spreading over an average distance of 40 feet took 23 seconds. Return time averaged 26 seconds. On another Valdosta Southern Railroad job, traveling mile-long, one-way hauls, this high-speed, "handyman" earthmover has delivered as many as 14 heaping loads in an hour.

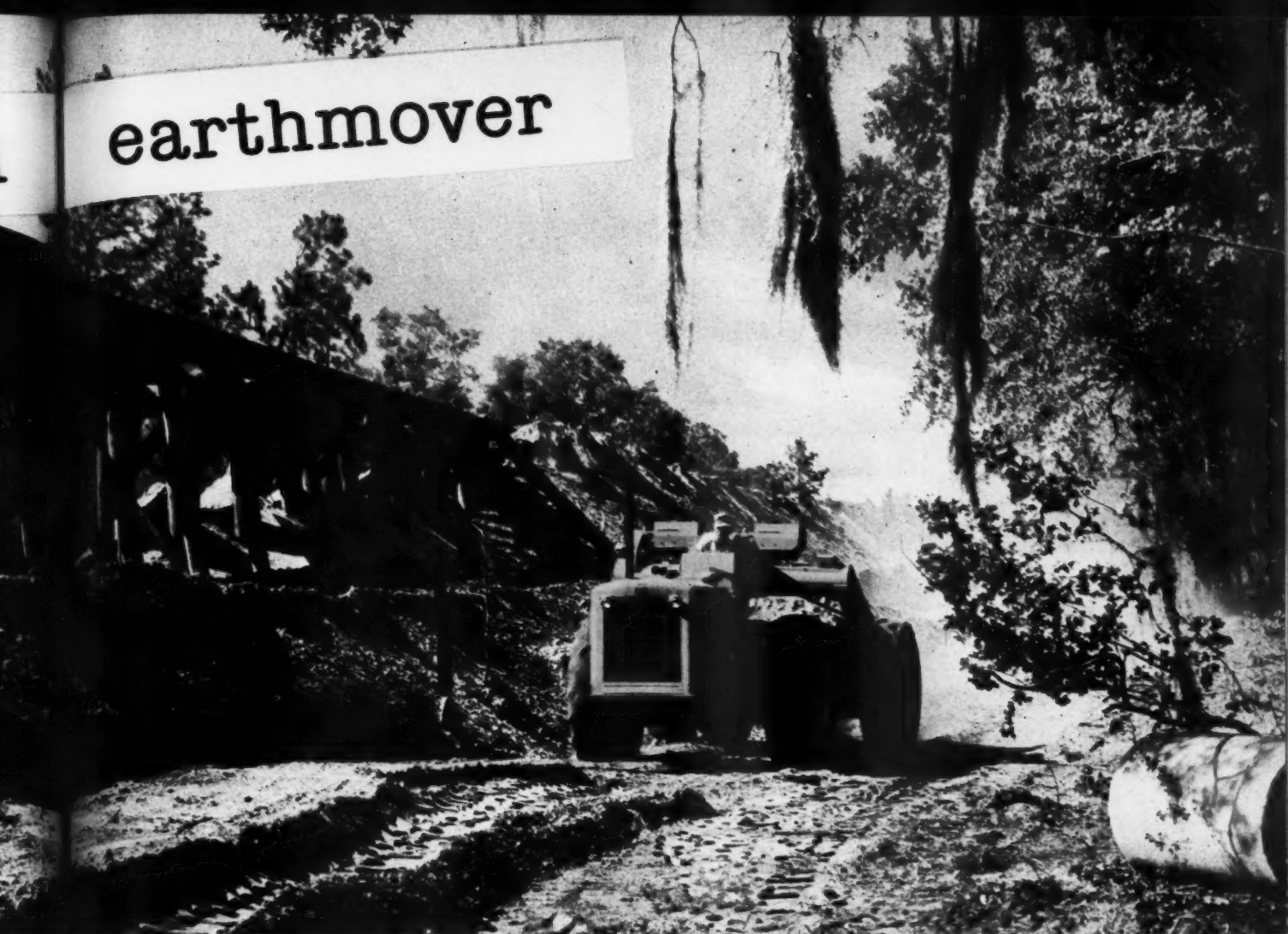
Tournapull earthmoving answers RR problems

Big, low-pressure tires do not damage rails or switches...deflect to move loads evenly over obstructions...do not chamfer ties, or trip block signals. If "D" is on or near the track when trains approach, it can quickly get out of the way. No time is lost in deadheading work trains to the nearest siding. Through traffic is never delayed.

Time studies, taken in one uphill loading area, showed that the D Tournapull, pushed by a 66 hp crawler, traveled 60' up an 8% grade, to gather a full load of dead sand in 31 seconds.



earthmover



"D"
t sec-
rough
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as 14

Owner Jimmy Miller says, "Our D Tournapull has replaced three 8-yard trucks and a 1/2-yard dragline in handling track-fill operation for the Valdosta Southern Railroad. We can work our 'D' in tight quarters and on railroad trestles without holding up any trains."

Check Tournapull advantages

For lower cost contract grading, check prices of a LeTourneau-Westinghouse equipment owner. For maintenance with your own earthmoving equipment check advantages of the off-track D Tournapull railroad "handyman" as well as the larger Tournapulls and Tournatractor. We'll be glad to demonstrate the D Tournapull "handyman" on your line so you can see for yourself what its speed and versatility can do for you.

Tournapull, Tournatractor—
Trademark Reg. U.S. Pat. Off. DP-917-RR

One of Tournapull's big advantages is its ability to travel under its own power, cross-country or over paved highways. Miller's machine, for example, was driven from Perry, Florida, to Valdosta, Georgia, and then to this job site near Pinetta, Florida.

"D" spreads its load of sand beside trestle in 15 to 35 seconds, depending on positioning of dirt around trestle timbers. This Tournapull has also been used to build shoulders for the South Georgia Railway in Valdosta, Georgia and in Perry, Florida.

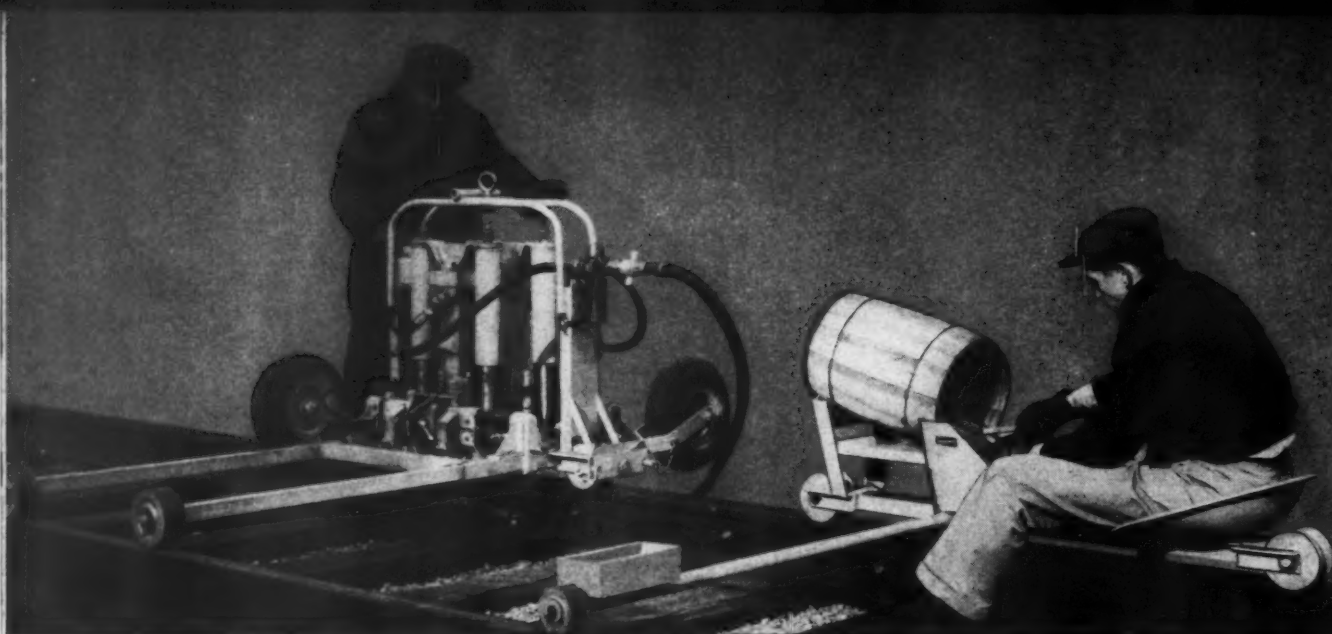


LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

g area,
a 66 hp
gather

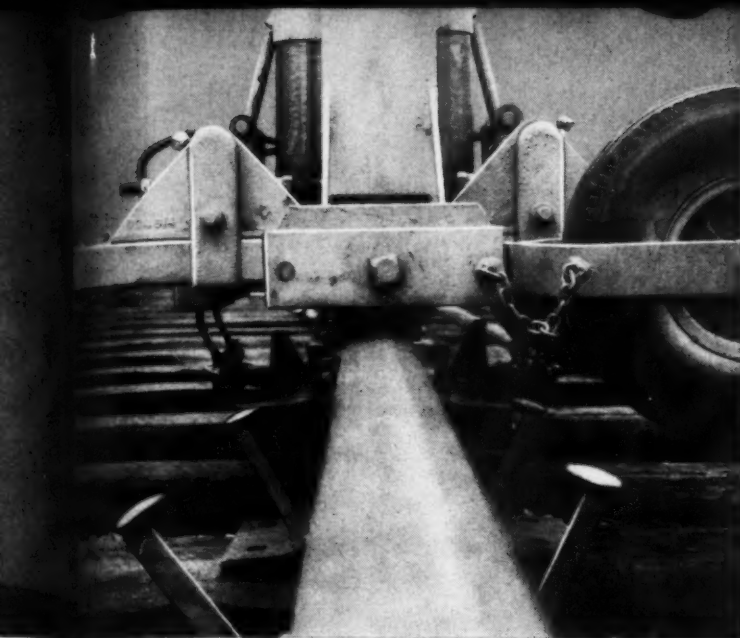


A spiking team—one man on a Racor Distributing Carriage places the spikes loosely in the line spike holes. Another man drives two spikes at once by operating the control handle of the DD4. Release of the control handle readies the Dual Driver for the next pair of spikes.

New Racor Dual Driver



The DD4 in action! All the advantages of a powerful pneumatic hammer, yet one man drives twice as many spikes without relief or fatigue. Costly hand setting of spikes is eliminated.



The spikes are automatically picked up and held vertical for driving by the Dual Driver. The spikes may be leaned either toward or away from the rail as shown here.

river cuts line spiking costs!

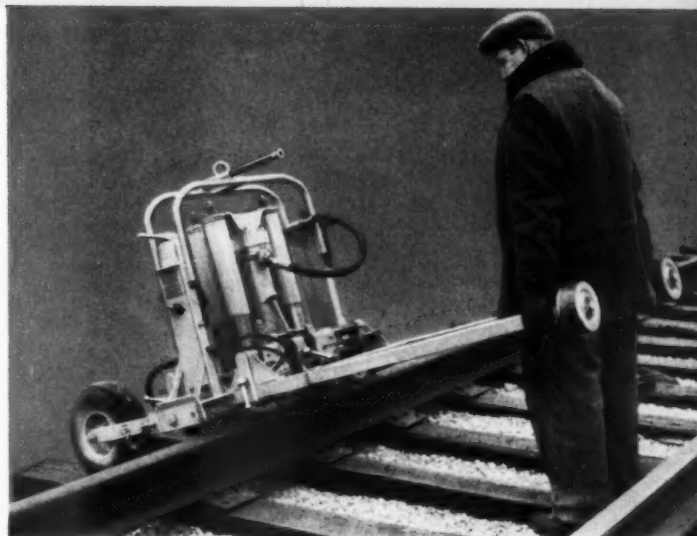
Actual experience on many miles of track has *proven* that the Racor Dual Driver DD4 effects substantial reduction in line spiking costs:

One man can easily drive at least twice as many spikes as any other spike driver. After spikes are distributed to the tie plate holes, the DD4 positions them for driving, drives two spikes at once, and automatically resets for the next pair of spikes.

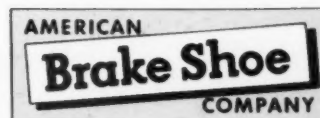
The DD4 can also drive Racor Studs!

Why not see how this new Racor Dual Driver can best fit into your own maintenance-of-way plans? Your Ramapo representative will be glad to consult with you about your road's specific conditions and requirements.

Also drives Racor Studs! The Racor Dual Driver can quickly be adapted in the field for driving Racor Studs in the anchor position of the tie plate.



The Racor Dual Driver is easily removed from track.



RAMAPO AJAX DIVISION
CHICAGO 6, ILLINOIS

IN CANADA: DOMINION BRAKE SHOE CO., LTD.

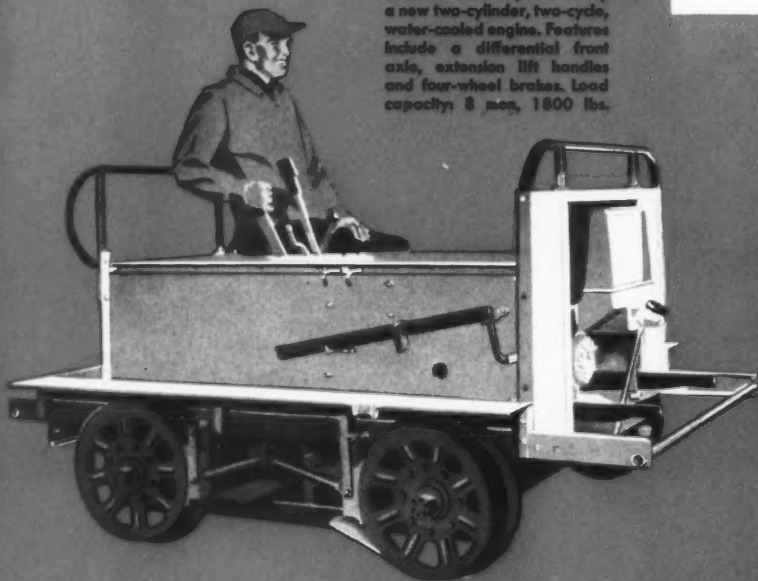
A-8237

When you think of
**MAINTENANCE
 TRANSPORTATION**

... think of

Fairmont

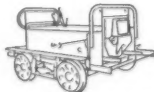
S2 SERIES AA STANDARD SECTION CAR is powered by a new two-cylinder, two-cycle, water-cooled engine. Features include a differential front axle, extension lift handles and four-wheel brakes. Load capacity: 8 men, 1800 lbs.



No more eloquent testimony could ever be offered on behalf of Fairmont quality than this simple fact: *Over half of the railway motor cars in service today bear the Fairmont name.* This impressive record of achievement has come about, first of all, through Fairmont's strict adherence to the highest standards of design and craftsmanship . . . and, secondly, through an unmatched record of performance in the field. Wherever Fairmont motor cars are on the job, they are adding still greater lustre to Fairmont's unique reputation for all the good things in maintenance transportation. High on the list of quality motor cars which Fairmont manufactures are the section and gang cars which you see here. Into each has gone the skill and experience of nearly fifty years . . . combined with the industry's latest developments in design and engineering. We invite you to study these matchless Fairmont products . . . and to contact us for further information. You will be glad that when you thought of maintenance transportation, you thought *first* of Fairmont!



M14 SERIES H LIGHT SECTION CAR can carry six men, yet can be operated by only two. Features include a steel frame, demountable wheels and a 5- to 8-horsepower engine. Load capacity: 6 men, 1200 lbs.



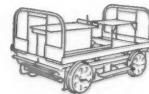
S2 SERIES H SECTION CAR offers unusual strength and performance. Features include a roller bearing engine, condenser cooling, extension lift handles, demountable wheels. Load capacity: 8 men, 1800 lbs.



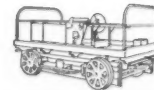
A3 SERIES D GANG CAR features a 17-h. p. engine, four-speed transmission and four-wheel braking. Adaptable as a heavy-duty section car. Economical in operation. Load capacity: 8 men, 2000 lbs.



A5 SERIES C GANG CAR can pull 6 trailers loaded with 120 men at 30 m.p.h. Features include a 31.5-h. p. engine and special construction. Four-speed, two-way operation. Load capacity: 8 men, 3000 lbs.



A6 SERIES F HEAVY-DUTY GANG CAR is expressly designed for heavy work. Features include a 100-h. p. engine; spring-mounted frame; four-speed, two-way operation. Load capacity: 10 men, 3500 lbs.



A8 SERIES B HEAVY-DUTY GANG CAR features a 140-h. p. V-8 engine, four-speed transmission, four-wheel drive and a hydraulic turntable. Makes an excellent hump car. Load capacity: 14 men, 4000 lbs.



FAIRMONT TRAILERS available for all Fairmont section and gang cars are designed for rugged service. Available in load capacities of 1,000, 2,000, 6,000 or 10,000 lbs. A very wide range of accessories is also offered.

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA

MANUFACTURERS OF INSPECTION, SECTION AND GANG CARS, HY-RAIL CARS, MOTOR CAR ENGINES, PUSH CARS AND TRAILERS, WHEELS, AXLES AND BEARINGS, BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT.

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RAILWAY

TRACK *and* STRUCTURES

MARCH, 1956

Vol. 52, No. 3

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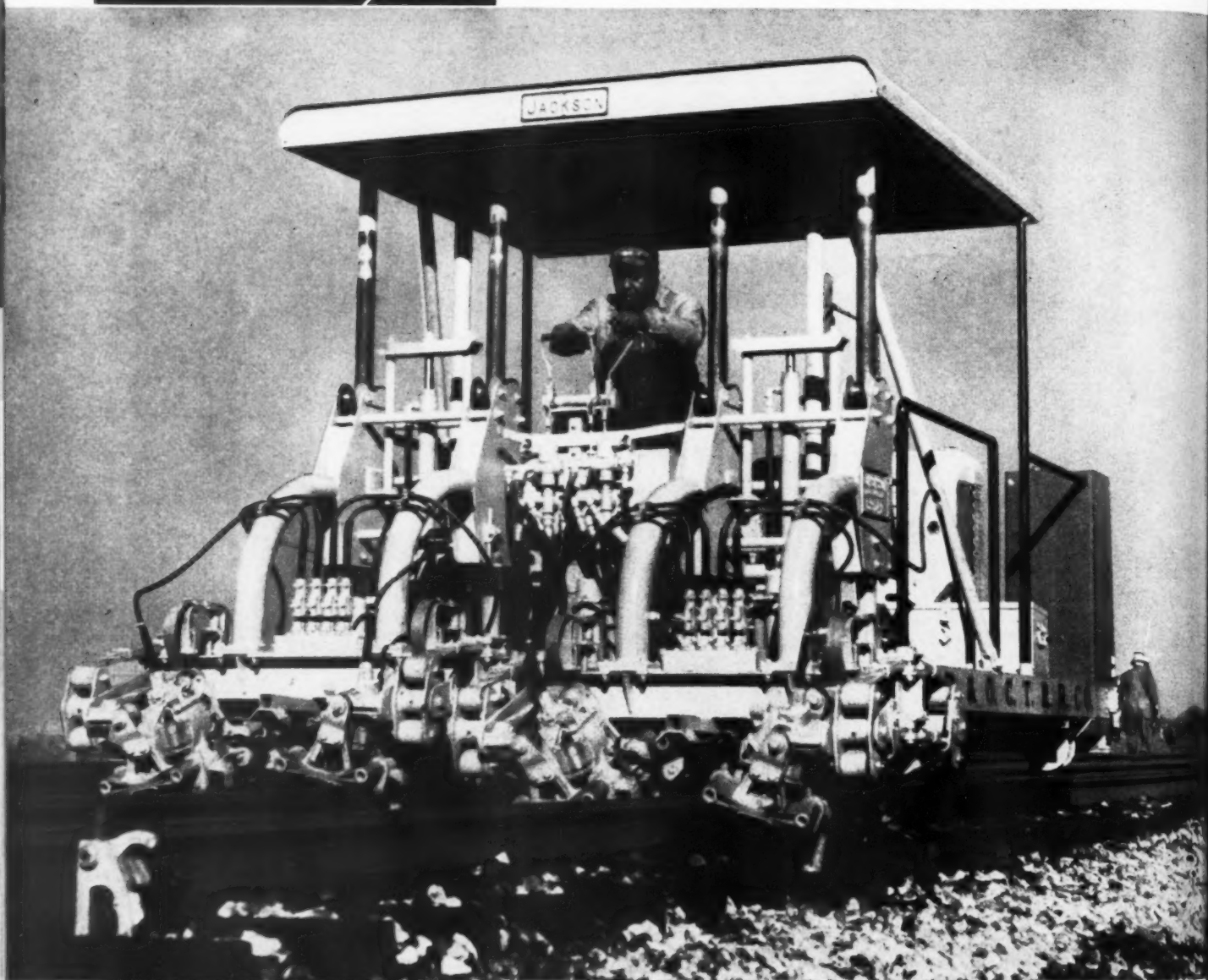
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IF THIS IS YOUR OBJECTIVE:
THE ON-TRACK-TAMPING MACHINE WITH
THE GREATEST ABILITY TO BOTH PUT UP AND
MAINTAIN FINEST TRACK UNDER ALL CONDITIONS



ACQUIREMENT
PLANS TO
SUIT YOUR NEEDS

YOU'LL KNOW YOU HAVE ARRIVED
WHEN YOU LEARN WHAT THIS MACHINE
IS DOING IN ALL PARTS OF THE COUNTRY.
LET US GIVE YOU THE COMPLETE
FACTS CONCERNING THE

JACKSON TRACK MAINTAINER

INVARIABLY FIRST CHOICE OF THOSE WHO COMPARE

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What Is "Imagineering"?



A Guest Editorial

By G. M. O'ROURKE

President, AREA

The word "imagineering" won't be found in the dictionary. But it ought to be in the vocabulary of every man holding a responsible position in engineering or maintenance-of-way work.

Just exactly what does "imagineering" mean? We could define the meaning of the word in general terms but that would hardly serve the purpose of this discussion. We want to know not only what it means, but how it can be used in solving the problems facing engineering and maintenance-of-way officers. The best way to do that is to cite examples of how it has been applied in dealing with past problems and to suggest the role it will play in solving those of the present and the future. Since equipment economies is the theme of this particular issue of *Railway Track & Structures* we will confine the discussion to the mechanization of maintenance-of-way work.

During the past three decades the railroads have made extraordinary progress in mass-production methods. To be impressed we need but observe the machines now in use for cleaning ballast, tamping ties, shaping and working ballast, renewing ties, laying rail, moving earth and doing many of the other jobs required in maintaining tracks and structures. It is "im-

agineering" that has made possible the development and intelligent use of all this equipment.

However, the blunt fact is that we just haven't finished our job. There is a pressing need for further and more intensive mechanization. Every maintenance man will find endless opportunities for the full exercise of ingenuity, skill and initiative in working over, revising, improving and adding to existing practices, methods, devices and machines. "Imagineering" is a collective term used to define the attributes required in the pursuit of these objectives.

The problem is not merely one of developing more and better machines. To justify the huge investment made in power equipment, now totaling more than \$100 million, there must be careful advance planning and proper scheduling of work to the end that it will be kept busy an optimum amount of time. This implies provision also of the means and the organization required to keep machines in condition to perform efficiently and reliably. "Imagineering" is the science or art that must be applied if these objectives are to be achieved.

We may rest assured that the future will be more exacting and more demanding and will require our work to be carried to a higher degree of refinement with less men. To this end new discoveries and new inventions are certain to result in the visualization of better machines. That's "imagineering."

Having defined "imagineering" as it applies to mechanization of M/W work, let us define it in the abstract sense. What it means is that to create something you must first imagine it. That is what creative minds are forever doing. They see images in their minds and then they make them into reality. They engineer the images into facts anyone can see. Now that we know what it means, let's get our men together for a brainstorm session and get ideas and suggestions. That, basically, is "imagineering."

PROGRAM

Fifty-Fifth Annual Meeting

American Railway Engineering Association

March 13-15, 1956

Palmer House

TUESDAY, MARCH 13

Morning Session—9:30 to 12:00
Grand Ballroom

Address of G. M. O'Rourke, president
Report of Neal D. Howard, executive secretary
Report of A. B. Hillman, treasurer
Greetings from the Signal Section, AAR, E. N. Fox, chairman
Greetings from the Electrical Section, AAR, K. H. Gordon, chairman
Address—"Fair Treatment for All," by R. G. May, vice-president, Operations and Maintenance Department, AAR, supplemented by new AAR film, "The Right to Compete"
Address—"Building People," by H. C. Marmaduke, Consultant, Management-Employee Relations
Address—"Engineering for Mobility," by Lt. Gen. S. D. Sturgis, chief of engineers, Department of the Army

Afternoon Session—2:00 to 5:00
Grand Ballroom

Report of Committees
Contract Forms
Records and Accounts
Yards and Terminals
Southern Railway film "Via Sevier"
Address—"Electronic Weighing of Freight Cars in Motion," by V. C. Kennedy, president, Streeter-Amet Company
Economics of Railway Location and Operation
Waterways and Harbors
Address—Summary of report prepared by AAR Calumet-Sag Committee in opposition to the Calumet-Sag Navigation Project, by A. L. Sams, office engineer, Illinois Central
Highways
Address—"Transportation, an American Institution," by H. H. Hale, Assistant to Vice-President—Highway Transportation, AAR

WEDNESDAY, MARCH 14

Morning Session—9:00 to 12:00
Red Lacquer Room

Reports of Committees
Water, Oil and Sanitation Services
Cooperative Relations with Universities
Panel discussion on "How Can the Railroads Attract and Hold an Adequate Number of Qualified Engineering Graduates in Competition with Other Industries?"
Wood Bridges and Trestles
Address—"Development of Working Stresses for Glued, Laminated Lumber," by Alan D. Freas, engineer, Division of Physics and Engineering, Forest Products Laboratory, U. S. Department of Agriculture
Address—"Application of Working Stresses in Glued, Laminated Lumber," by Frank J. Hanrahan, executive vice-president, American Institute of Timber Construction, Washington, D. C.
Clearances
Impact and Bridge Stresses
Masonry
Iron and Steel Structures
Lantern slide presentation, jointly with Committee 8—Masonry, showing recent serious damage to railway bridge structures by floods, with commentary by W. R. Wilson, assistant engineer, Bridge Department, AT&SF

Association Luncheon—12 Noon
Grand Ballroom

Announcement of results of election of officers
Address by Wayne A. Johnston, president, Illinois Central, on "The Ever-New Challenge of Railway Engineering"

Afternoon Session—2:30 to 5:30
Red Lacquer Room

Reports of Committees
Waterproofing
Wood Preservation
Buildings
Address—"Painting of Frame Buildings," by Don F. Laughman, technologist, Forest Products Laboratory, U. S. Department of Agriculture
Maintenance of Way Work Equipment
Economics of Railway Labor
Address—"Better Human Relationships as a Key to Improving Maintenance of Way Work," by W. E. Cornell, engineer of track, Nickel Plate
Special Committee on Continuous Welded Rail
Motion Picture, "Welded Rail on the Santa Fe," with commentary by R. H. Beeder, assistant chief engineer system, AT&SF

THURSDAY, MARCH 15
Morning Session—9:00 to 12:30
Grand Ballroom

Reports of Committees
Ties
Panel discussion on crossties
Track
Address—"Highlights of Work Performed by Committee 5—Track," by C. J. Geyer, retired vice-president—Construction and Maintenance, C&O

Roadway and Ballast
Address—"Landslides and Their Significance to Engineers," by Edwin B. Eckel, head of the Engineering Geology Branch, U. S. Department of Interior Geological Survey
Rail
Closing Business
Installation of Officers
Adjournment

COMMITTEE MEETINGS

Luncheons or meetings of individual committees are scheduled to be held during the convention as follows:

Monday

Highways—meeting and luncheon, 9:30 a.m., Room 9
Contract Forms (subcommittee 3)—meeting, 10:00 a.m., Room 1

Tuesday

Track (subcommittee chairmen only)—luncheon, 12:15 p.m., Room 1
Records and Accounts—luncheon, 12:15 p.m., Room 4
Water, Oil and Sanitation Services—luncheon and meeting, 12:15 p.m., Room 18
Yards and Terminals—luncheon, 12:15 p.m., Room 8
Economics of Railway Location and Operation—luncheon, 12:15 p.m., Rooms 15-16
Contract Forms—luncheon, 12:15 p.m., Room 6
Economics of Railway Labor—luncheon, 12:15 p.m., Room 9

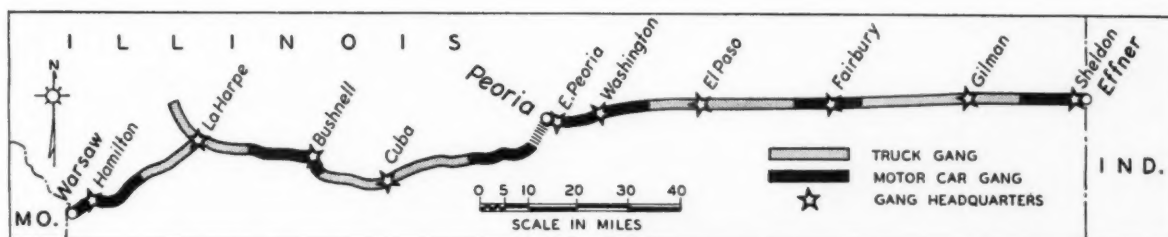
(NOTE—See pre-convention motion picture theater, Exhibit Hall, Palmer House, March 12, 9:00 a.m.)

Wednesday

Roadway and Ballast—meeting, 2:30 p.m., Room 4
Ties—meeting, 3:30 p.m., Room 5
Buildings—meeting, 9:30 a.m., Room 7
Continuous Welded Rail—meeting, 2:30 p.m., Room 7

Thursday

Wood Preservation—meeting, 10:00 a.m., Room 5
Note—All rooms, 1 through 13, are located on the third floor; Rooms 14 through 18 are located on the Club floor, midway between the fourth and fifth floors; and the Grand Ballroom and the Red Lacquer Room are located on the fourth floor.



ALTERNATING pattern of territories of the truck and motor-car gangs is shown by this map of the TP&W.

A complete reorganization of the track forces of the TP&W has been carried out, which is notable for two reasons. One is the nature of the new set-up which consists of large and small gangs with alternating territories. The other is the use of special trucks, each carrying a motor car and push car, which are assigned to the larger gangs.



SPECIAL TRUCKS designed for use of mobile gangs carry motor car inside and small push car fastened to tailgate. Four of the 11 track gangs have trucks of this type.

In New Organization on TP&W . . .

Trucks Team Up With Motor Cars

● Trucks that the road describes as "tool houses on wheels" are now in use by the track-maintenance forces of the Toledo, Peoria & Western. Conceived and designed by R. H. Egbert, chief engineer of the road, and built under the supervision of J. J. Dailey, superintendent of motive power, they not only have space for men and the usual tools, but also each of them carries, piggyback style, a motor car and a push car as regular equipment.

Coincident with the introduction of the special trucks the maintenance of way set-up of the TP&W was completely reorganized along unusual lines. The revised organization comprises two types of gangs, small motor-car equipped units and larger truck-equipped crews. The two types of gangs have assigned territories in a staggered arrangement, thereby producing a set-up that has unusual qualities of flexibility and versatility.

Before the present set-up was

put into effect the track-maintenance organization on the TP&W was composed of 16 section gangs equipped with motor cars only. These gangs each consisted of a foreman and six men and the sections ranged from 16 to 18 miles in length. When it was necessary to do heavy out-of-face work, or any work requiring a larger force of men, two or three of these section gangs were grouped together. This practice almost always resulted in considerable delays while the individual gangs traveled to the job site. It also involved an expense for non-productive supervision. Extra gangs were sometimes employed for the large jobs if the amount of work warranted it.

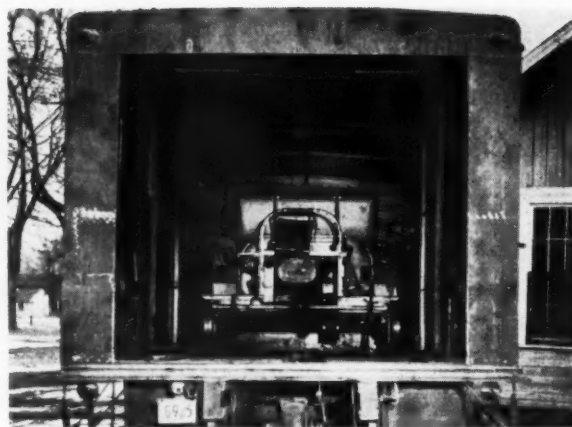
Number of Gangs Reduced

The effect of the reorganization has been to reduce the number of track gangs from 16 to 11—five on each of the road's two divisions and one in the yard at East Peoria, Ill.

However, the number of men regularly employed is about the same, but the need for extra gangs has been virtually eliminated except when doing out-of-face rail-laying work.

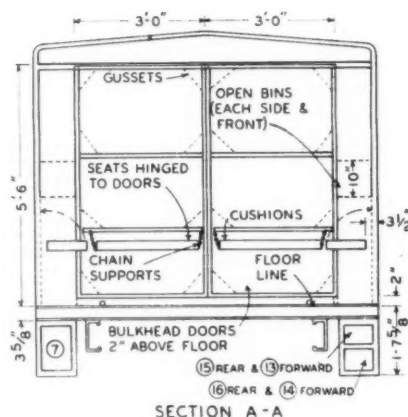
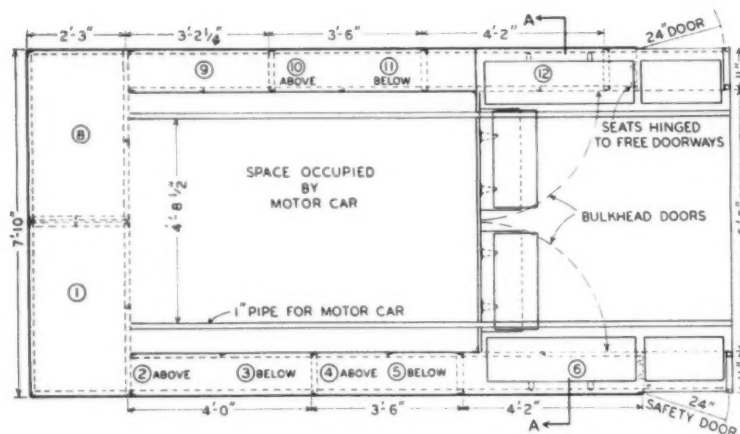
Trucks Carry Everything

The key to effective operation of the road's new maintenance set-up is found in the special trucks which are furnished the mobile gangs. Each of the 1½-ton trucks has been modified by the road's forces to incorporate a specially designed van-type body which accommodates a six-man motor car, all necessary track tools and power equipment, and seating space for the gang. Each truck has also been equipped with a hydraulic-lift tailgate on the underside of which is carried a small light-duty push car. The hydraulic tailgate is used to raise and lower the motor car or push car when it is desired to load or unload either of these items of equip-



PUSH CAR has been lowered to ground by hydraulic tailgate. It is easily disengaged from slots holding it in place.

MOTOR CAR is carried in forward end of truck body. Steel doors separate car from seating area.



ment. After the tailgate has been lowered the push car can be released easily by sliding it from the slots which hold it in position.

When not in use the motor car is carried in the forward end of the truck body and is anchored to the truck bed by bolts in order to prevent movement. These bolts swing up from the truck bed and are provided with clips which fit on the step-bar of the motor car. Large wing-nuts hold the clips securely in place. Seating space for the men is provided in the rear of the truck. As an added safety feature, should the motor car escape its bonds, steel doors are provided to separate the motor-car storage area from the seating area.

Arranged around the truck body is a series of compartments for the storage of hand tools. These compartments are accessible only from the outside and are kept securely locked when not in use. Separate compartments are provided for the storage of an 8-tool Jackson electric-vibratory tamping outfit.

By providing space for all the

tools needed by the gang in carrying out normal work, the necessity for removing tools from the truck at the end of each day has been eliminated, thus saving considerable time at the beginning and end of each day's work period. Other power equipment, such as bolting machines, adzers, power rail saws and power rail punches, are available for the use of the gang but are not permanently assigned. Assignment of these tools is supervised by the roadmaster.

An additional time saver for each truck gang is a portable telephone which enables the foreman to contact the closest operator and obtain a line-up of the day's scheduled train movements while at the work location, thus avoiding delay in obtaining this information before proceeding to the job.

Have Alternating Territories

Another factor which adds to the versatility and effectiveness of the road's new track-maintenance organization is the unusual distri-

bution of assigned territories between the mobile gangs and section gangs. At the present time two of the mobile gangs are assigned to each division with territories ranging from 32 to 34½ miles, depending upon the general condition of the track. They are supplemented on each division by three smaller motor-car equipped section gangs with shorter territories alternating with those of the truck gangs. For example, starting at the extreme end of the road's Eastern division, there is a section gang with 13 miles of track, followed by a truck gang with 32 miles of track, then a section gang with 13½ miles of track, another truck gang with 32 miles of track, and finally, at the west end of the division, a section gang with 16½ miles of territory. This pattern of staggering the assignments of the truck gangs and sections is likewise employed on the road's Western division. At Peoria, the yard section gang, made up of a foreman and seven men, has approximately 13 miles of yard tracks and 4 miles of main line.



HYDRAULIC tailgate acts as elevator when loading or unloading motor car. Steps on pipe rails hold car on gate.



ALL TOOLS needed by the gangs in regular track-maintenance work are carried in "made-to-size" compartments.

TOOL COMPARTMENTS—

- | | |
|---|--|
| ① 1 GENERATOR FOR JACKSON TAMPERS | ⑩ 4 TRACK JACKS |
| ② LUNCHES | ⑪ 4 TRACK JACKS |
| ③ 5 AXES & 5 BRUSH HOOKS | ⑫ 4 TRACK CHISELS, 5 RAIL TONGS, 4 TIE TONGS, 1 PORTABLE GRINDER |
| ④ 5 TRACK SHOVELS | ⑬ 8 SPIKE MAULS |
| ⑤ 5 TRACK SHOVELS | ⑭ 10 TRACK WRENCHES & 2 SLEDGES |
| ⑥ 10 BALLAST FORKS | ⑮ 8 PICKS |
| ⑦ 10 LINING BARS, 2 CLAW BARS & 2 TRACK GAGES | ⑯ 4 TRACK LINERS, 4 HAND ADZES & 1 RAIL PUNCH |
| ⑧ 1 GENERATOR FOR JACKSON TAMPERS | BINS-8 JACKSON VIBRATORY TAMPING TOOLS |
| ⑨ MISCELLANEOUS TOOLS & SUPPLIES | |

LISTING shows tools usually carried in truck of each mobile gang. Figures in circles are truck-compartment numbers.

OPPOSITE PAGE—Plan and cross section of TP&W truck. Numbers of compartments correspond with those in above list.

Generally, the full labor complement on each truck gang consists of a foreman and 10 laborers, with one of the men doubling as the truck driver. The smaller section gangs are each composed of a foreman and six men. During the winter months it is usually the practice to reduce these gangs to seven and four men, respectively.

Gangs Aid Each Other

By staggering the assigned territories of the mobile gangs with those of the section gangs, the road's management felt that greater flexibility and economy would be obtained over that of having an organization composed entirely of truck gangs. It was reasoned that some phases of track-maintenance work would not require the larger labor force represented by the mobile gangs, while on the other hand, many jobs would demand this larger force. Thus, by alternating the territories of these two types of gangs, whenever the smaller section crews need assistance they can

call upon a neighboring truck gang with its larger force. In like manner, if the truck gang encounters a situation that is not of sufficient magnitude to utilize the entire force economically it can call upon one or the other smaller neighboring gangs. These smaller motor-car equipped section gangs are provided with 4-tool Jackson vibratory tamping outfits, plus the usual complement of hand tools. This exchange in work in no way alleviates a gang's responsibility to its assigned territory. It does mean, however, that individual crews are responsible for all work performed away from their assigned territories.

Inspection by Patrolmen

Track inspection work under the new set-up is largely the responsibility of six track patrolmen who keep the individual foremen advised as to what work is needed. The track patrolmen also give a copy of their daily report to the roadmaster for his information. In addition, each gang foreman is re-

quired to make at least one inspection trip over his assigned territory each week. By so doing, he is enabled to be constantly aware of the general condition of his track and to plan his work accordingly.

Centrally Located

For the most part, the TP&W is paralleled by paved highways. Also, graveled, all-weather roads cross the track at approximately one-mile intervals, thus providing easy access to the right of way. The headquarters for each truck gang has been located as near as possible to the center of its assigned territory to reduce travel time to a minimum. Usually not more than twenty minutes is consumed in traveling to work. If the job site can't be reached with the truck, the motor car and push car are placed on the track with the necessary tools at a nearby road crossing and the gang proceeds the rest of the way to the job by rail.

Costs Are Reduced

The last year in which an all-section-gang maintenance organization was in effect was in 1952. By 1955, the revamping of the maintenance-of-way set-up had been completed. These years form a basis of comparison between the old and the new methods, as approximately equal amounts of work were accomplished during the two periods. Even though the same labor force was employed, the over-all maintenance-of-way expenditures in 1955 were 20 per cent under 1952 in spite of substantial increases in unit costs for labor and materials. Mr. Egbert attributes this saving to the special trucks and the staggered arrangement of the gangs.

Operator Training ...

Key to Efficient Use of M/W Equipment

Prospects are that in 1956 railroad maintenance of way and structures departments will acquire more power machines and tools than ever before. The growing amount, variety and complexity of the equipment being used by these departments are multiplying the problems involved in providing trained personnel for operating the machines.

As a prerequisite to the solution of these problems there are several pointed questions to be answered. What methods of selecting and training machine operators will assure the most effective

use of the equipment? Are these methods in use on individual roads or are there reasons why they cannot be employed. If so, what are these obstacles and what can be done about them?

To obtain a cross-section of opinion regarding these and other questions relating to the selection and training of machine operators, *Railway Track and Structures* requested a number of top-ranking maintenance of way and equipment supervisory officers to participate in a symposium on the subject. The results are presented on these pages—Editor.

C. T. Blume* Says . . .

... Selection by Progression Is Best

● The selection and training of machine operators by the method of progression will, in my opinion, assure the most effective use of maintenance of way equipment.

The first consideration is to select personnel of a caliber most likely to develop into equipment operators from the maintenance of way department and primarily from the track forces insofar as the company relations with the employees will permit.

The operators are classified in Groups "B" and "C." Group "A" consists of field repair and maintenance personnel. An employee starts as an operator in Group "C," with division seniority, operating power tools and small units of roadway machines such as power track wrenches, adzing machines, track mowers and similar equipment. The advancement to Group "B," with system seniority, occurs after one year of satisfactory service in Group "C." Group "B" personnel operates the medium to heavy units, consisting of roadway machines and work equipment such as tractors, cranes, prime movers and similar equipment. System seniority has advantages here because the equipment is subject to system service and it is important that changes in operators be reduced to a minimum.

The training is programmed un-

der the direction, and is the responsibility, of the equipment maintenance organization of the railway. Obviously the Group "A" personnel, having progressed through Groups "C" and "B," respectively, have a good understanding of the maintenance and operation of most equipment, irrespective of classifications. The procedure in developing an operator is through contact of Group "A" employees with the other groups. The operator is trained in the field in the actual performance of his duties. The training includes proper maintenance and operation of the equipment, stressing the best operating methods, capacities, etc., in order to obtain the utmost from the equipment without mechanical abuse. The Group "A" employee notifies the superior of the maintenance equipment organization when he feels an applicant is qualified to operate a specific piece of equipment. The supervisor, or his designated representative, will certify the employee, and only after such certification is the employee posted on a group roster.

The seniority date of an operator is the first day of compensated service in a group. Before he is considered for an assignment to any piece of equipment, irrespective of his seniority date, he must be qualified on that make and kind of equipment, including the attachments applicable to it.

Group "C" employees should experience a minimum of one year's service in the group before being permitted to "bid" on vacancies or new positions, or otherwise being permanently advanced to Group "B" positions. However, relief operators are a necessity in the groups and, accordingly, Group "C" employees may qualify on equipment allocated to Group "B" during their first year of service and upon certification that they are listed on the Group "B" extra board for relief work. The extra board employees have a separate seniority from the regular personnel of Group "B" and are called for relief assignments in accordance with their qualifications and seniority on the extra board.

Personnel that is advanced to Group "B" under this procedure has a primary understanding of the major equipment and in fact, may be fully qualified and subject to early certification after promotion to several units. After a short period following final promotion a man develops into a seasoned operator, progressing through the same training period as his earlier training in Group "C." The qualification necessary for certification in Group "A" consists of passing a written examination on mechanical equipment and its operation and completing 30 days actual performance in field maintenance of the equipment, under close supervision. The personnel of Groups "A" and "B" have seniority priority in respect to junior groups only if there is no position in the higher group to which their qualifications and

* General supervisor work equipment, Frisco, Springfield, Mo.

seniority entitle them to be placed.

These methods are practiced by the Frisco with certain modifications. We are restricted to some ex-

tent in the selection of operators by labor agreements, and also through lack of applicants of the desired caliber. Notwithstanding these

minor difficulties, this method of procuring and training operators as well as field repair mechanics, is working out very well.

L. R. Lamport* Asserts . . .

. . . Operators Must Know the Work

● As a primary requisite, men selected for operation of machines should have a knowledge of the work to be performed by the machine. This means they should be selected from the ranks of section laborers, bridge and building workers or other classes with whom the machine is used.

Selection of the men should be based on their individual ability and this should be left in the hands of their immediate supervisor such as the roadmaster or bridge and building supervisor who is thoroughly familiar with his personnel. Ordinarily younger men adjust themselves more readily to the op-

eration of machines and should be chosen insofar as possible.

When a machine is acquired of a new type, not previously used, it is essential that a factory representative train not only the man who is to operate the machine, but also the mechanic who is to maintain it. The mechanic is then in a position to "break in" additional operators and instruct them in the care and lubrication of the machine.

The training of an operator may not be complete in a short period of instruction; for that reason the mechanic should return for the purpose of checking and correcting any shortcomings the man may have. In the event that an operator does not meet the requirements

after a reasonable trial, he must of course be disqualified.

The above represents the general procedure followed on the North Western System, although we, like other roads, are limited to the extent we must comply with seniority rules of existing agreements and assign operators' positions to the oldest qualified men. I find no fault with such limitations, however, as they prevent abuses and reward older men with the better paying positions provided they can handle the work satisfactorily.

With few exceptions, our machine operators hold rights on their own division only, which means instructing and qualifying operators on each division to which a new machine is transferred. This is not always desirable, but there is little we can do about it under present labor agreements.

* Chief engineer maintenance, Chicago & North Western, Chicago.

G. W. Miller* . . .

. . . Urges Use of Operator Instructors

● The methods used by nearly all railroads in selecting and training machine operators are usually governed by the seniority and promotion rules contained in their wage agreements. It follows, therefore, that the training procedure will generally conform to that used when training specialists in other branches of the maintenance of way service where the men are organized.

Before a new machine is delivered, it is usually necessary to issue a bulletin to maintenance-of-way forces calling for one or more qualified men to operate this particular unit, and shortly after the date that the bulletin expires the several senior men at the top of the list are canvassed to determine their qualifications. If the machine is to be operated on the track, the employee is required to pass examinations pertaining to operating rules as well as the current Maintenance of Way Rules. The employee should then be questioned by the supervisor of work equipment to determine what his knowledge is and what his ex-

perience has been in handling equipment of this type. If it is apparent that he has a good knowledge of machines, the roadmaster or B & B master should give him an opportunity to demonstrate whether he can or cannot operate the machine.

Before any job is awarded, the new operator should be required to take a written examination or aptitude test on the care and operation of maintenance of way work equipment. The "Manual of Instruction for Care and Operation of Maintenance of Way Work Equipment," as published by the American Railway Engineering Association, should be referred to when preparing the examination paper.

At the time the machine is delivered it is the usual practice for the supplier of larger machines to send along a man for at least four or five days to demonstrate and to assist in training the new operator. This is very important and more than one man should be given an opportunity to operate the new unit under the guidance of the factory-trained representative. After one or two days' demonstration,

the machine should then be put to work and again the factory representative should be on hand for a day or two.

After a week or two of preliminary use of this unit, the supervisor of work equipment or his assistant should again make sure that the new operator and his assistant fully understand its lubrication requirements, the type of oil to be used, the proper fuel and that all nuts are properly tightened.

The immediate supervisor, roadmaster or B & B master then assumes charge of the operation and it is their responsibility to see that the new operator is performing efficiently. However, operators should never be requested to do work with a machine for which it is not designed.

The training of machine operators, in most respects, is no different than training of employees for any other type of skilled work. There must be, on the part of the operator, an inherent interest in machinery, a good general knowledge of railway work, and an appreciation of the need for avoiding train delays and of working safely. Also, he must be sufficiently interested in his own machine to know when the unit requires repairs and to check it over before breakdown actually

* Engineer maintenance of way, Canadian Pacific, Toronto, Ont.

occurs, removing it from service.

The most important item in selecting and training machine operators is the supervision or encouragement that is given to them by their immediate supervisor. By frequent coaching or instruction it

is usually possible to make a good machine operator out of a former railway employee.

A suggested improvement in existing training programs for machine operators would be to employ operator instructors. These instruc-

tors would be men who are trained and qualified to operate any machine and who could teach and qualify all new machine operators. Some of these instructors would eventually qualify for promotion to supervisors of work equipment.

R. K. Johnson* Says . . .

. . . Mechanical Aptitude Is Basic

● Men selected to fill the position of machine operator should normally come from a machine operator helpers' roster, and the one qualification which should be given first consideration, and one which is practically indispensable, is natural mechanical aptitude. Prospects for such positions should also show evidence of ingenuity, and a willingness to protect company property by following its instructions regarding the proper care of machines.

An employee entering service as a machine operator helper should be given at least 10 days, but no more than 30 days, to show his aptitude. If he does not show sufficient aptitude to operate the machine to

which he is assigned, he should be removed from his position. If the employee shows the necessary aptitude, he should first be given training on a variety of off-track machines, starting with small crawler tractors, front-end loaders, or angledozers; later on machines such as crawler shovels and cranes; then on small on-track cranes such as a "Burro"; and finally on a locomotive crane.

Any helper undergoing training should be required to move from one machine to another in order that his knowledge will be diversified, and so that he is not in a position to block the training of other helpers. He should also be required to accept a temporary position as machine operator on any machine he has become qualified to operate. Although he should receive opera-

tor's pay while so engaged he should not be permitted to establish any seniority rights by virtue of his temporary position. On the contrary, he should be required to continue his training until such time as he is qualified to operate any of the more complicated machines.

A helper who fails, within 30 days, to qualify successfully as a machine operator, should be retained on the helpers' roster, and at the first available opportunity, should be given 30 additional days' training on the machines which he failed to operate successfully. Failing to qualify after 30 additional days' training, he should be required to forfeit all of his seniority on the helper roster.

After a helper's training has been completed, he should be required to accept a permanent position as roadway machine operator, to which his seniority entitles him. Failing to do so, he should be removed from the roster.

* Superintendent work equipment and welding, Chesapeake & Ohio System, Barboursville, W. Va.

R. H. Beeder* Stresses . . .

. . . Need for "Training the Trainers"

● The selection of machine operators to be assigned to maintenance of way equipment is pretty well dictated to us by the provisions of the working agreements with our men. These require that operators must be selected from the ranks of the senior available qualified maintenance of way and B&B employees on the operating divisions, who have written applications for such service on file with the superintendent. The major job, therefore, is training these men rather than their selection.

One of the most important steps is to promote the real fact that the selected individual is a member of the maintenance of way team. The promotion and training of men from the maintenance of way ranks is the best means of accomplishing this. When our section laborers and helpers and other men on similar

jobs went to work, they signified an interest in and a natural leaning toward, making our railroad a going concern. The need for supervisors to recognize and practice a program of developing enthusiasm and incentive among their machine operators is the first step in any sort of training program.

Well-planned and comprehensive training programs for machine operators are difficult to carry on due to the frequent changes in personnel and the scattered locations of the men. A small part of the training of machine operators can be handled by a visit of a day or two from a manufacturer's representative or service man, especially on the newer and unfamiliar types of machines. The main objective, however, must be the "training of the trainers." The trainers in this case would be the field supervisors of work equipment, work equipment maintainers and others whose work

places them in contact with the machine operators every day. Investments in the thorough training of this group will be returned over and over again.

Several courses of action are available in inaugurating training programs for field supervisors of work equipment and others. Many manufacturers offer short training periods to groups in their plants on request. Several manufacturers of equipment also offer service and maintenance training courses that are set up in mobile units at a point where the railroad organization can be concentrated conveniently, such as a system work equipment repair shop. The courses are conducted by specialists in their field and are flexible enough so they can be modified or tailored to meet the requirements of a particular group of trainees. These methods are in use on our railroad to a degree that results are noticeable, but no railroad takes full advantage of the possibilities offered, especially in the field of setting up their own mobile units for operator training.

* Assistant chief engineer, Santa Fe System, Chicago.



CONSTRUCTION of combination freight and passenger station at Goodland, Kan., was gang's first major project.

Rock Island Composite Gang ...

● An experimental construction gang, recently organized on the Rock Island, has been provided almost every tool and type of equipment necessary to undertake any project to which it may be assigned. It is a composite bridge and building-water service gang.

The gang is set up on a system basis. It will work on projects which may include such tasks as brick and block laying, concrete work and finishing, setting reinforcing steel, lathing and plastering, masonry work, carpentry (both rough and finish), glazing, roofing, flooring, cabinet work and painting. In addition, the gang will perform all plumbing, heating, ventilating, steam fitting, piping and other similar work encountered on an assigned job.

The gang will also be called upon to do masonry or concrete

- Does B&B work formerly done under contract
- Consists of men trained as "Jacks of all trades"
- Is fully equipped with power tools and machines

work in construction or repair operations on bridge piers, abutments and wing walls. However, it will not attempt any electrical work, except the roughing-in of conduit, nor will it engage in timber or steel bridge erection or maintenance. In the interest of economy and speed the gang may be augmented by local forces.

The gang was organized primarily as the result of talks between the management of the road and the Brotherhood of Maintenance of Way Employees. The brotherhood was of the opinion that the

Rock Island should be able to develop most of its own specialists in the construction field. W. B. Throckmorton, chief engineer for the road, agreed with the organization's representatives.

In the past, whenever large and extensive construction, remodeling or maintenance work was undertaken—work that required specialized construction personnel—the Rock Island felt that it was necessary to call upon private contractors to do the work. For the road to engage successfully in this type of construction

Major Items of Equipment Assigned to Composite B&B-Water Service Gang

1 ½-ton stake body truck with power winch
 ½-ton pick-up truck
 6-ton capacity Schield Bantam truck crane, Model T354, equipped with ¾-cu yd drag-bucket, ¾-cu yd clamshell and Insley ½-cu yd concrete bucket.
 10-ft boom extension for crane, giving a maximum boom length of 35 ft.
 Mall 3000-watt, 60-cycle, 120-volt portable generator for lights and electrical tools
 " chain saw with guide to assure even cuts
 " 10-in circular saw, Model No. 106
 " 7¼-in circular saw, Model No. 70
 " ¾-in chuck drill, Model No. 586
 " ½-in chuck drill, Model No. 125
 Bits for masonry, steel and wood in sizes from ¼ in to 1 in
 Mall ¾-in electric impact wrench, Model No. W780
 " 2-hp electric concrete vibrator, Model No. 3EV23
 " 26-in or 36-in power trowel, Model No. TG26, with 2-hp Briggs & Stratton engine
 " 3-in belt sander, Model No. 31
 Mall ¾-hp electric router and surface planer, Model No. 52810

Black & Decker ¾-in capacity electric hammer drill, Model No. 34
 Carver 2-in centrifugal pump, gasoline driven
 Koehring Kwik-Mix gasoline driven 2 sack concrete mixer with pneumatic tires, Model No. 1152
 Winslow wheel-barrow type platform scales with two 500-lb weight beams
 Delta 10-in heavy-duty bench saw, Model No. 34-405
 " 6-in jointer, Model No. 37-220
 " 6-in bench grinder, Model No. 23-625
 Oster power pipe vise, model No. 432
 Townely roofer's kettle—85-gal pot
 Universal Eze-bilt scaffolding—1200 sq ft with 5-ft lifts
 Chicago Pneumatic rotary air compressor, Model No. 125RG-2
 " " medium-weight air-demolition tool, Model No. CP115
 " " heavy-weight air-demolition tool, Model No. CP117
 " " air rock drill, Model No. CP14
 " " air rock drill, Model No. CP39
 Stanley mitre box, Model No. 358, with 36-in stiff-back saw and 28-in by 5-in table
 Buff & Buff level, Model No. 18712
 " " transit, Model No. 16878

work it was agreed that both parties must work together in order to:

1. Develop construction specialists among railroad employees;
2. Equip them as necessary to perform such work economically; and
3. Thus obtain completed projects at lower costs.

How Men Were Selected

The present organization table for the gang calls for a foreman, an assistant foreman, and nine composite mechanics. As a preliminary step in organizing the crew, H. B. Christianson, Jr., assistant chief engineer of the Rock Island, contacted personally nearly all gangs in the road's B&B and water service departments. He explained to them the nature and purpose of the gang and also the desired qualifications for its members.

Seniority was an important consideration in selecting the men for the gang but other factors were also considered. For instance, because the gang would be called upon to handle many different jobs, it was necessary to select men with experience in a variety of crafts. At the same time it was reasoned that any worker with a thorough knowledge of a particular craft would in time pass his knowledge on to other members of the gang.

Bids were accepted from bridge

and building and water service employees and placed in order of seniority. The men were then screened as to their skill and proficiency in a variety of crafts. Complete information concerning the individuals was obtained from local supervisors who had been closely associated with them. Ability to get along with one another was a prime requisite. The foreman was selected on the basis of his experience, leadership qualities and ability to organize. He is indirectly responsible to the chief engineer, but reports directly to the division engineer and the district supervisor of bridges on whose territory he is located.

The question of the type and amount of equipment to be furnished such a gang was given careful study. Consideration was given to drawing the necessary equipment as needed from the road's equipment pool, but this idea was rejected because such equipment may not always be readily available and costly delays could result in waiting for its arrival. Rental of the equipment was also considered but was rejected because it was felt that the rental charges on the large projects involved would amount to the cost of the machine in a comparatively short time. In addition, equipment rental agencies are not always located in the gang's immediate vicinity. Here again probable delays

would result while the equipment was being secured.

With these considerations in mind, it was decided that the gang should be completely outfitted with most of the tools and equipment it would need. In conjunction with this decision, it was evident that the gang should engage in only those projects which would utilize to the fullest extent the large units of equipment assigned to it. The principal units of equipment permanently assigned to it are listed in the table.

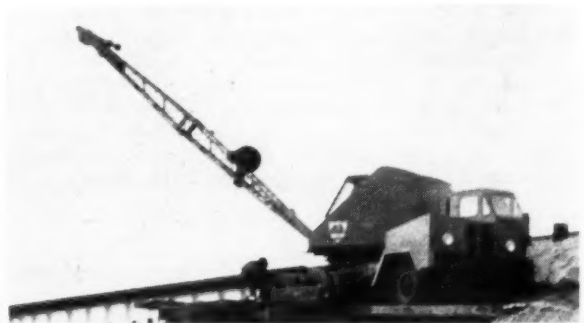
In addition to the power units listed, the necessary hand tools have been furnished by the road, with the exception of those tools which ordinarily would be expected to be furnished by the men themselves if they were members of a conventional bridge and building gang. The tools and equipment for the gang were selected under the general supervision of P. J. Calza, acting as the chief engineer's personal representative in the field, who has also been assigned to follow the gang's progress.

To insure proper maintenance and care of the composite gang's equipment, three members with chauffeur's licenses are assigned to drive the 1½-ton stake body truck, the ½-ton pick-up truck and the crane carrier. One man has been trained in the care and operation of

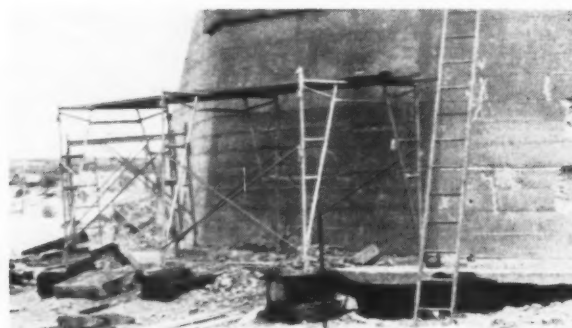
Tools and Equipment Include . . .



. . . A 1½-ton stake-body truck with a power winch.



. . . Schield Bantam truck crane with three types of buckets.



. . . Universal portable scaffolding with 5-ft lifts.



. . . Mall portable electric chain saw with guide.

the crane by a factory representative, and another member of the gang cares for and operates the other gas-driven equipment. As part of his duties, the assistant foreman supervises the general care and maintenance of all the tools, large and small. In the event of a breakdown that can not be taken care of by those who are assigned to care for the machine, the road's local mechanics are engaged to make repairs. However, if major repairs are needed the unit is taken to the El Reno shops where the repairs are made by company forces.

Comfortable Bunk Cars

Being members of a system gang, the men are required to spend much of their time away from home. For this reason the road has placed at their disposal a converted tourist sleeper for use as a bunk car. It is fully equipped for their convenience and comfort.

The living quarters are furnished with steel lockers and steel-frame double-deck bunks bolted to the floor. There are four lavatories and two showers. The car is heated with two 50,000-Btu oil stoves and is ventilated with three 20-in exhaust fans. The foreman's quarters have steel lockers, a steel-frame double-deck bunk, and a desk. The kitchen is provided with a stove, a refrig-

erator, and a 40-gal automatic hot-water heater, all modern and operating on propane gas. A complete complement of new cooking and eating utensils helps to provide an incentive for cooking better meals. The men take turns with the cooking duties and "K.P."

The outfit also includes two reconditioned box cars for materials and tools.

Has Done Much Work

On December 31, 1955, the gang completed construction of its first major building—a combination freight and passenger station at Goodland, Kan. This job was started on September 12, 1955. Previous to the construction of the Goodland depot, the gang had built a new scale pit at the Rock Island's Armourdale yard at Kansas City. It is presently engaged in restoring the backwalls and raising a deck-plate girder bridge near Nara Visa, N. M. Future plans include the installation of a 108-in by 42-ft Multi-Plate pipe near Concho, Okla. On this job the gang will do all the necessary excavation for placement and backfill. Tentative future plans call for the construction of a combination office, wash and locker room for the car department at the road's Blue Island yards near Chicago.

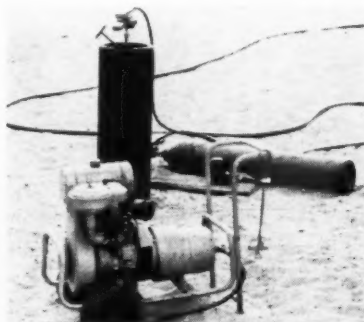
To the end that the men would be equipped to the best advantage to carry out the jobs assigned to them, the Rock Island management arranged for a special class in concrete construction. It was conducted by the Portland Cement Association in the depot at Nara Visa. In addition, local specialists in the building trades were engaged to provide instruction, as needed, until the men were capable of handling all phases of the work themselves. Also factory representatives instructed each member of the gang in the operation, care and maintenance of all the tools that have been assigned to it. For further self improvement, several "how to" books have been provided.

Costs Not Available

The management of the Rock Island is quite satisfied with the general performance of the gang. A comparison of actual unit costs with those of similar previous jobs is not yet available. Officers of the road are confident that the direct unit costs are lower; but the determinant factor, they say, will be the indirect costs. These include such costs as vacations; payroll taxes; housing; equipment depreciation; interest and maintenance; general supervision; transportation and miscellaneous supplies.



... Variety of electric drills.



... Mail 3000-watt generator.



... Cutting and welding outfit.



... Kwik-Mix concrete mixer.



... CP rotary air compressor.



... And a 1 1/2-ton pick-up truck.



Through wider use of "cycle" maintenance and the "detour" system, the railroads have made progress in their efforts to reduce maintenance costs. But the author declares that there is much more that can and should be done. He believes that maintenance officers should be thinking in terms of "fantastic" machines, and gives his ideas of what these machines should be designed to do. He believes, further, that steps should be taken to develop standardized methods of performing the different types of M/W operations.

Advice for M/W Officers . . .

Do More "Fantastic" Thinking

By J. P. Hiltz, Jr.

Vice-President
Operation and Maintenance
Delaware & Hudson

● Early in 1954 I had the privilege of addressing the Maintenance of Way Club of Chicago. In this talk, I warned maintenance-of-way people that the then developing decrease in gross revenues would adversely affect their budgets and unless they were able to devise ways and means of performing work more economically, their programs, and finally their properties, would suffer.

Few will care to argue that on most railroads this situation materialized in 1954 and in the greater part of 1955. In the latter part of 1955 an increase in gross revenue made the picture look brighter for a short time. Then a round of substantial wage increases again siphoned off most of the "cream." It would appear that our maintenance-of-way departments again find themselves in the positions which confronted them two years ago.

What developments have there been in the interim to help the maintenance-of-way fraternity to resist the "squeeze" of declining

budgets and of increasing costs?

The fact that maintenance-of-way departments have more closely approached a standard method of performing work is, in my opinion, one of the most significant developments in the field during the past two years. More and more railroads have, consciously or not, accepted the "cycle" principle of maintenance and are doing their work on that basis. Because they have accepted the "cycle" principle, they have been naturally led into mass-production methods through the use of the so-called "detour" system where multiple tracks are involved.

Detour Economies "Incredible"

The economies which can be realized through use of the "detour" system, which involves obtaining the absolute use of tracks for heavy maintenance work, are almost incredible. Maintenance-of-way officials have done a commendable job recently in convincing their managements and trans-

portation departments of this fact. It is the continuing obligation of every maintenance officer to bring this fact to the attention of his management when projects for reducing trackage are under consideration—projects that will eliminate the possibility of using the so-called "detour" system. In many cases where reduced trackage has resulted from improved signaling, the net result has been an eventual increase in operating expenses because the ability to make maximum use of mass-production maintenance methods has been lost.

The approach to standardization in track maintenance methods has simplified the machinery problems involved. An increasing number of railroads are using or are demanding the same general types of machinery. In fact, in general, there are only two types of track work to be done, that for which the absolute use of track can be secured and that which must be done under traffic. There is no good reason why standard types of equipment for each category of work cannot be developed. There must be a best way to do the job and it is time that personal prejudice, pride and opinions be laid aside for the benefit of the industry. Once such standards are established, both as to method and to types of equipment,

every one concerned can concentrate on improving these methods and the equipment required in connection with them.

Must Have "Fantastic" Machines

If we are to overcome rising costs we need "fantastic" machines. These machines will be expensive and can only be produced if the majority of railroads are interested. Even if the majority of railroads will use the machines, the costs attached to research, development and production may be such that manufacturers would have to be subsidized in order to produce them. I made this same statement in 1954 and have not changed my mind. Rather, I feel that the railroads, probably through associations and committees, should even now be telling the manufacturers what they want and offering to assist them, both technically and financially, in the development of their needs.

In 1954 I said that our equipment requirements in maintenance of way included such items as a tamping machine which automatically raises its own track, carries its own grade, tamps uniformly and performs the entire operation with one or two men. I also felt that a machine, using only two or three men, could be developed which would remove old spikes from a tie, eject it, insert a new tie and spike it to proper gage. I mentioned the desirability and practicability of automatic welding machines, automatic track liners, devices for delivering ties and ballast, etc.

Offers Three-Part Program

In 1954 I did not criticize the progress made up to that time; in fact I praised it, and neither do I criticize the progress made to date. However, the fact remains that we have not yet realized the type of developments that I feel we must realize in order to properly maintain our properties and to remain in a competitive position with other forms of transportation. Moreover,

Mr. Hiltz is well known in the maintenance of way field. His early service was with the Pennsylvania but he first achieved prominence as engineer maintenance of way of the Delaware, Lackawanna & Western. Later he became chief engineer maintenance of way of the New York Central System. A year ago he went with the Delaware & Hudson as general manager, and has now been promoted to vice-president, operation and maintenance, of that road.

An advocate of "cycle" maintenance and the "detour" method of performing track work, Mr. Hiltz is known for his original and independent thinking. In an address before the Maintenance of Way

Club of Chicago early in 1954 he advanced a number of thought-provoking ideas on how to reduce maintenance costs. The gist of that speech was published in the June 1954 issue of this magazine. With the "equipment economies" theme of the March issue in mind, *Railway Track and Structures* requested Mr. Hiltz to prepare the accompanying statement on "where we are today in mechanization and where we are going in the future." Readers may not agree with his opinions but they will be impressed by them and by the forthright manner in which he expresses himself. Mr. Hiltz' ideas are not necessarily those of this publication—Editor.

I feel that our progress in realizing these developments will be wastefully slow unless:

1. Maintenance of way officials accelerate the trend toward standardization of track-work methods by open-mindedly approaching the problem of finding the best way to perform each type of operation. In many cases this can be easily done by honestly analyzing existing practices which have been continued through tradition, pride or prejudice.

2. When standard methods are developed, maintenance-of-way officials decide their ultimate requirements, under these methods, for machinery and equipment and so advise the manufacturers.

3. Steps be taken by associations of railroads to assist in the development and production of this machinery and equipment in the event the manufacturers are unable to do so because of limitations dictated by personnel, plant or capital.

Must Realize the Obvious

The natural reaction to the above propositions is that they are obvious and that they are idealistic. Unquestionably they are obvious but unless the obvious is realized and appreciated nothing is ever done about it. However, these propositions are not idealistic to the extent of being impractical. Railroads

have set standards in the past and have adopted procedures in connection with these standards. Further, various associations of railroads have engaged in cooperative effort in order to accomplish a huge improvement or development. In fact, in its own small way, one railroad at least is today following the above suggestions closely.

Most railroad people regard the maintenance-of-way department as the "backbone" of industry. I hope that the following warning and summary of my remarks will help in a small measure to keep them in that position. The possibilities for further substantial economies in any other departments of the railroads are limited; therefore, the maintenance-of-way department can expect that it will be called upon again to assume the major burden in any reduction of operating expenses. The maintenance-of-way department cannot assume this burden, unless it develops "fantastically" improved methods of doing the work or unless the property under its care deteriorates. These "fantastically" improved methods will involve "fantastic" machinery and equipment. We must start thinking in "fantastic" terms.

Standardization and cooperation within the entire fraternity will do more to bring about this type of thinking and the desired type of results than any other medium yet tried to date.

"Most railroad people regard the maintenance-of-way department as the 'backbone' of the industry. I hope that the following warning and summary of my remarks will help in a small measure to keep them in that position. The possibilities for further substantial economies in any other departments of the railroads are limited; therefore, the maintenance-of-way department can expect that it will be called

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When CTC Goes in . . .

Machines Take Up Track, Too

Installations of centralized traffic control in multiple-track territories have made it possible on a number of roads to remove considerable mileages of main track. Such roads are therefore confronted with the problem of devising economical methods of taking up the unneeded materials and reclaiming or disposing of them, depending on their condition.

As might be expected, mechanization is playing an important role in this work. Many existing machines can be adapted to it without change, but others require some modification or the use

of special attachments. A number of manufacturers, taking note of the volume of such work being done, have modified their equipment in such a way as to adapt it to the specialized operations involved. In other instances, individual railroads, sometimes working with interested manufacturers, have taken the initiative in this effort.

Some of the equipment being used is shown on these pages. By no means, however, do these pictures comprise a complete record of the types of equipment in use.—EDITOR

Handling Rails and Fastenings . . .



LOADING RAILS with Burro crane operating on track that has been stripped of all fastenings. In this way 5 to 7 cars are loaded per day.

Various types of existing equipment are readily adaptable to the work of taking up and loading rails and fastenings. Such equipment includes power track wrenches, spike pullers and rail-laying cranes. For loading rails the crane may operate on the track being removed, or it may be carried by the work train into which the materials are being loaded. Wheel or crawler-mounted cranes are also suitable for the purpose. There are, of course, a number of hand operations involved, including the removal of bond wires, joint bars and rail anchors, and the placing of the scrap in small piles to be picked up and loaded later. The rail may be sent to a central point for classifying or cropping or it may be classified in the field and loaded accordingly.



TIE PLATES are being loaded by 30-in magnets operated by two crawler cranes carried by work train.



CROSSTIES from a second track taken up at this location have been bundled for loading on trucks. Loading is being done by a

Caterpillar Tractor equipped with a Hystaway crane. This is a contract job being done by Morrison-Knudsen Company, Inc.

How Crossties Are Loaded

The common practice when taking up unneeded trackage is to classify the crossties between those that are suitable for reuse and those that are to be destroyed. Generally the latter ties are removed first, after which those to be reused are loaded loose for shipment to the point of use, although in some cases (above) such ties are banded to facilitate handling. For loading loose ties directly into open-top cars a variety of equipment is available, consisting mostly of existing machines with special attachments, as shown at the right and below.



ABOVE—Pettibone Mulliken Model 441 Speed Swing with fork attachment rooting old ties out of ballast and loading them. It is reported this machine will load an average of $7\frac{1}{2}$ ties per minute. Machine has a 180-deg swing.



LEFT—Caterpillar tractor uprooting old ties for loading into trucks in the yards of the Nickel Plate at Madison, Ill. Unit consists of an HT4 tractor-shovel with a modified fork attachment.

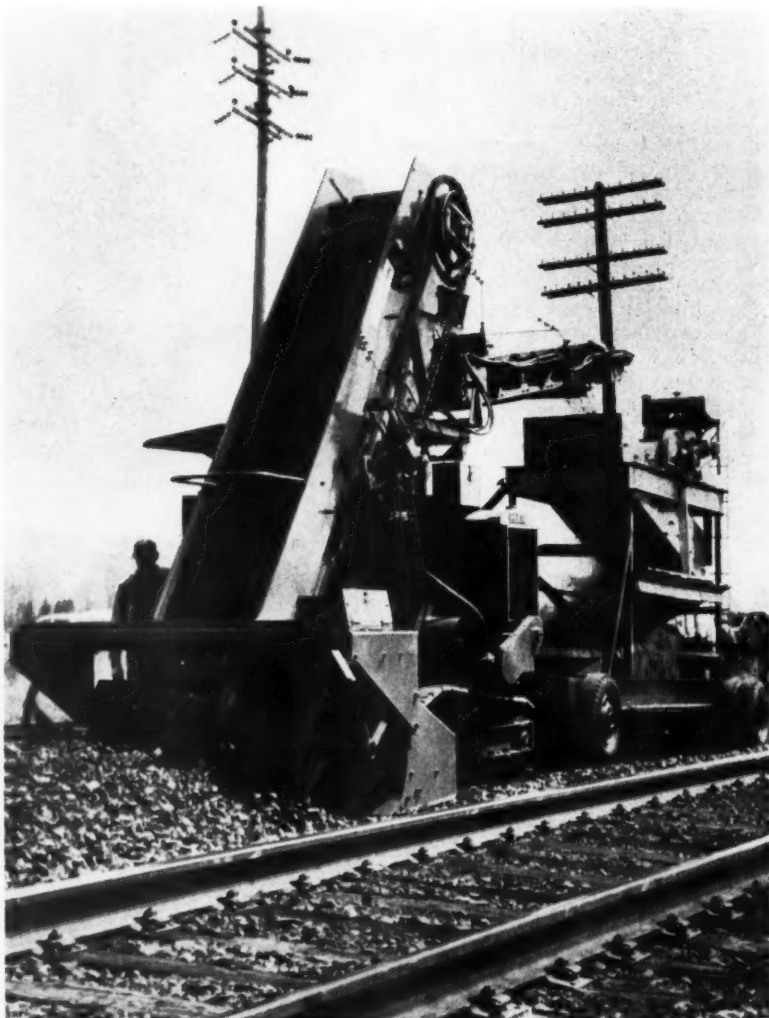
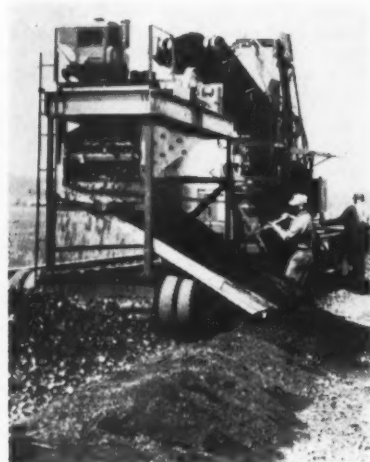
Ballast Reclamation Is Big Job . . .



SUPER MOLE shoulder ballast cleaner of the Railway Maintenance Corporation has been successfully used for ballast salvaging operations.

EQUIPMENT for reclaiming ballast, as developed and used on the Delaware & Hudson, is shown by these two views.

Where the ballast does not need to be cleaned a Barber-Greene No. 582 bucket loader is used to load the ballast directly into cars. For use where the ballast must be cleaned before loading, a screening machine was built, which consists of a Telsmith double vibrating screen erected on a separate carriage towed behind the bucket loader. Screened stone $\frac{1}{2}$ in and over in size is deposited in a windrow at the rear of the cleaner and cinders and fines are discharged to the side (below). The railroad reports that the average cost for cleaning stone by this method is 10 cents per ton. After a considerable quantity of the stone has been cleaned the screener is set aside and the bucket loader is used to load the cleaned stone directly into cars. The total cost for cleaning and loading stone averages 48 cents per ton. When this equipment had been perfected it was necessary to have only two men for the operation—the operator of the bucket loader and a trackman to act as a lookout for trains and to do other minor work.



When unneeded tracks are taken up in territory ballasted with crushed stone or the equivalent, the matter of reclaiming the ballast for further use must be considered. If the ballast is reasonably new or has been recently cleaned it can frequently be reused without processing of any kind. More often than otherwise, however, the old ballast must be screened before further use, but if this is to be done the cost must be kept well within that of new ballast.

The major types of equipment being used in ballast reclamation fall into two categories. One of these is the equipment needed where the job is simply one of picking up the old ballast and loading it into cars or trucks. A variety of existing machines have been and are being used for this purpose, ranging all the way from clamshell buckets to force-feed loaders.

The other category of equipment

comes into the picture when it is necessary to screen the ballast before it is loaded. Various combinations of machines are in use for picking up and cleaning the material. Some of these redeposit the cleaned ballast on the roadbed to be picked up and loaded later. Other combinations include equipment for elevating and loading the cleaned material. At least one machine is available that is designed to perform all these operations, that is, picking up, screening and loading the reclaimed material. Frequently various types of auxiliary equipment, such as spreaders, motor graders and bulldozers, are used to form the old ballast into a windrow before it is picked up.

It is interesting to note that in England, where the same problem of ballast reclamation is encountered, it is not unusual to transport the foul ballast to a central location for cleaning.



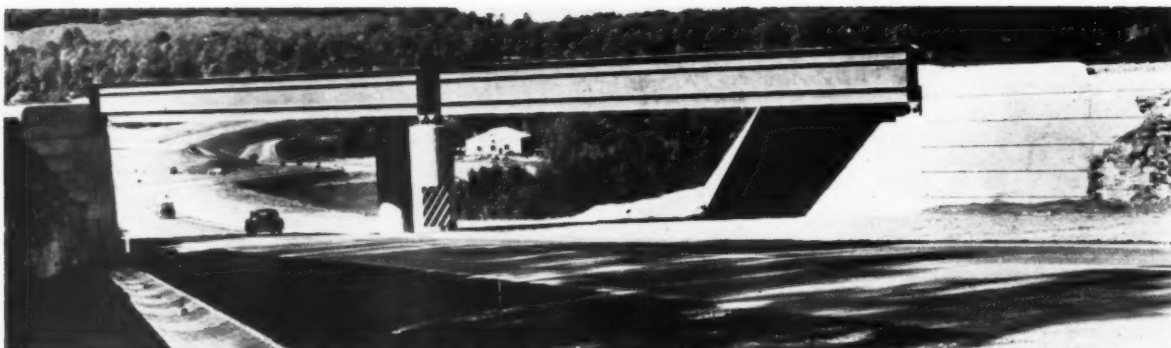
TRACK CLEANING machine made by Pettibone Mulliken Corporation, known as the Model 56-H Trak-Kleener, will pick up and load ballast into hopper cars.



A BALLAST reclamation outfit developed by the Athey Products Corporation, Chicago, is shown by the views at the left and below.

Known as the Athey railroad ballast reclaimer this outfit combines the Model 125 Hiloader with a shaker screen and an elevating device. The machine carries a patented full-floating feeder at the front equipped with a cutting edge which can be raised or lowered to the desired depth of cut. The feeder carries the material to be reclaimed to the loader belt which transports the foul ballast to a shaker screen where dirt and fines are screened out to fall back to the ground. The cleaned ballast then moves to a receiving hopper from which it is elevated and loaded into railroad cars by a conveyor belt. Complete hydraulic controls, operated from the driver's seat, are said to raise or lower the conveyor belt to permit loading over the side of any applicable type of railroad car. The conveyor can be swung 60 deg either side of center. It is said that the outfit can be quickly converted to the Athey force-feed track cleaner or to the 125 Hiloader stockpile or windrow loader.





ALL WELDED through plate girder bridge carrying the Delaware & Hudson over the Cherry Valley Turnpike, Otsego county, N. Y.,

consists of two 80-ft spans, designed for an E-60 loading by the New York Department of Public Works, Albany, N. Y.

News Briefs in Pictures . . .



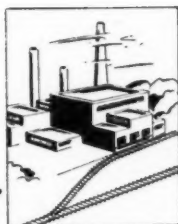
TRANSFERRING a 560-ton Marion walking dragline (above) seven miles in seven days was accomplished by mobile power supplied by two Caterpillar D397 electric sets, each delivering 315 kw. A power cable 1000 ft long was used, allowing the unit to travel 2000 ft before the sets had to be moved. Seven roadways, five power lines, three railroads and one river were crossed during the movement. The dragline, aided by two Caterpillar D7 Tractors, built the necessary approaches and dug the required cuts in providing the roadway. When crossing the railroads, the ties and rail were removed from the track.

SCOTCH-LITE letters 4 ft high make these new Chicago & North Western box cars (right) stand out at night at railway crossings. Cross-buck is also reflectorized.



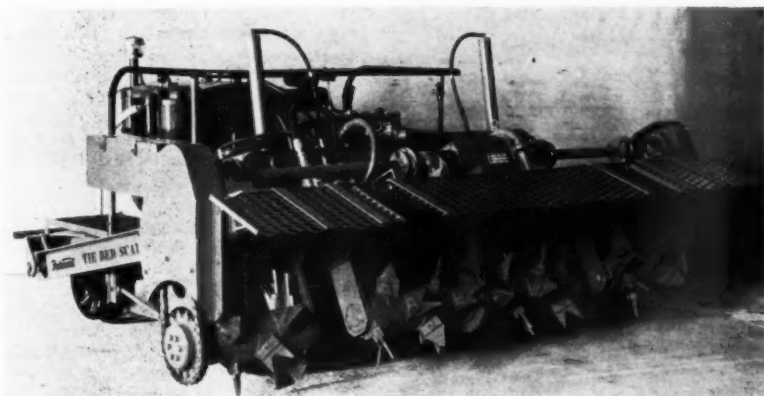
HYDRAULIC aerial ladder that can lift a technician to a working height of 30 ft, is used by the electrical department of the Illinois Central's Chicago Terminal division to facilitate replacement of overhead messenger cables. The ladder is mounted on a truck chassis adapted for rail movement, and can be rotated in nearly a complete circle. The unit will be used in replacing 10 miles of cable on the suburban lines.





PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices



TIE-BED SCARIFIER

A LARGER engine, providing 40 per cent more power at governed speed, is one of the improvements recently announced for the W87 tie-bed scarifier manufactured by Fairmont Railway Motors, Inc., Fairmont, Minn. Other im-

provements include the use of vane-type hydraulic motors, elimination of the manual clutch in the power take-off, redesign of the outer-drum sprockets to make them self cleaning, and the addition of a turntable warning flag to signify that the ram is fully raised before moving the unit.



INDICATOR FINDS IMPROPER GAGE POINTS

A NEW portable tool designed for use in checking track gage has been developed by the Nordberg Manufacturing Company, Milwaukee, Wis. Known as the Gage Indicator, the tool can be used to locate gage conditions requiring correction and to spot the points where regaging should start and stop. It can also be used as a regular hand gage.

The Gage Indicator moves on the track on eight ball bearings and is insulated so it will not shunt signal circuits. Four of the bearings, two on each side, roll on top of the rail, and the other four, also two on each side, roll on the side of the rail head at the gage line ($\frac{1}{8}$ in. below the plane of the top of the rails). A spring inside the square tubing frame members keeps the gage line rollers in tight contact with the rails.

A pointer multiplies gage irregularities approximately four times, and small variations in gage are said to be easily seen on the dial which is calibrated from correct to an inch wide or an inch tight.

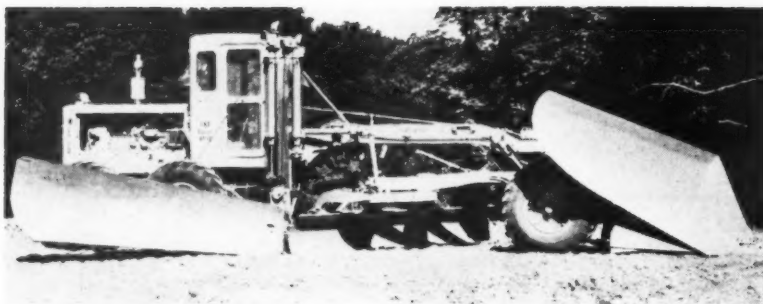


RAIL LUBRICATOR

NORMAL WAVE motion of the rail is transmitted directly to a short-stroke pump by means of a stiff bracket clamped to the base of the rail in a new rail lubricator recently introduced by H. T. Kennedy Company, Inc., New York.

This arrangement is said to eliminate the use of ramps, plungers and other mechanical devices actuated by the wheels of passing traffic. Known as the Hurcol lubricator the new unit has been introduced as an adjunct to the Aladdin lubricator. It is reported to have considerably more grease capacity than the

latter. Grease is brought to the running face of the rail through flexible hoses connected with one to four applicators. These applicators are securely held against the web of the rail with "C" clamps which pass under the base of the rail. It is said that installation can be made by two men in about one hour. The lubricator operates on standard grease at any speed and output can be adjusted to suit conditions.



HYDRAULIC MOTOR-GRADER ATTACHMENTS

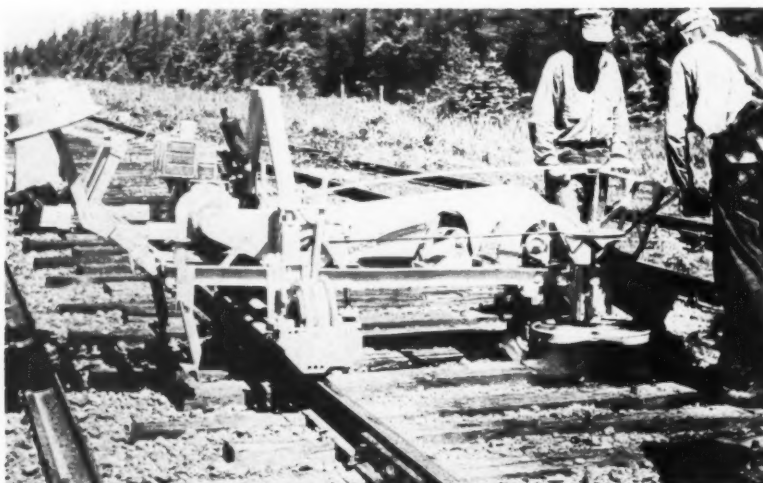
A COMPLETELY new set of hydraulic attachments for its No. 12 and No. 112 motor graders has been announced by

Caterpillar Tractor Company, Peoria, Ill. These include a hydraulically shiftable moldboard, hydraulically mounted snow plow and bulldozer, and hydraulically actuated snow wing. The shiftable moldboard is concave in shape to allow for

the hydraulic cylinder which has a stroke of 48 in with 27 in of travel to the right and 21 inches to the left. Standard moldboards will be equipped with a slide bar in place of the cylinder to allow for manual offset of the blade.

The cylinder of the new snowplow and bulldozer is controlled by a four-position valve that allows floating but gives down pressure when desirable. Two cylinders are mounted on the mast to control the cable that supports each end of the snow wing. This type of control is reported to give greatly increased speed for moving the wing around obstructions that may be encountered.

Power for the attachments is supplied from an enclosed hydraulic system mounted on the front of the dashboard between frame members. Controls for the attachments are located inside the cab.

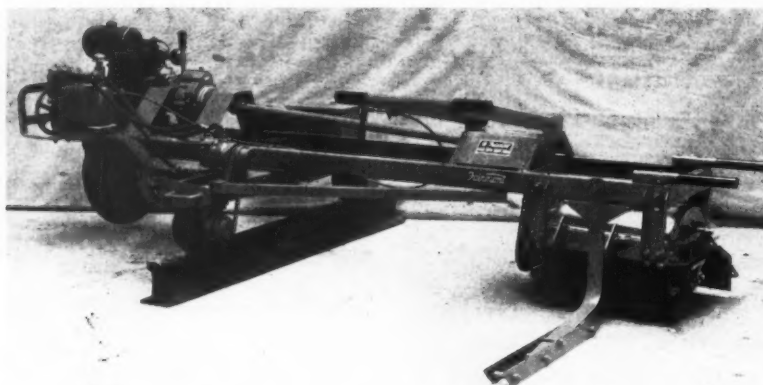


BALLAST ROUTER CLEANS TIE CRIBS

A MACHINE designed for removing high ballast from the cribs and sweeping the ties ahead of adzgers has been announced by the Nordberg Manufacturing Company, Milwaukee, Wis. It removes just enough ballast to expose the ties for the adzgers.

Known as the Ballast Router, the machine cuts a level trench parallel to the top of the tie, or inclined downward toward the tie end as desired, and conveys high ballast to the side of the track. An endless digging chain cleans the full width of the crib.

The machine has four flanged wheels for traveling on the track to the point of work where two wheels are removed and positioned as counterweights. The two permanent wheels are equipped with quick-connecting outside flanges.



TIE BRUSH IMPROVED

MODIFICATIONS have recently been made in the Fairmont W88 power tie brush to adapt it better to railroad practices, according to Fairmont Railway Mo-

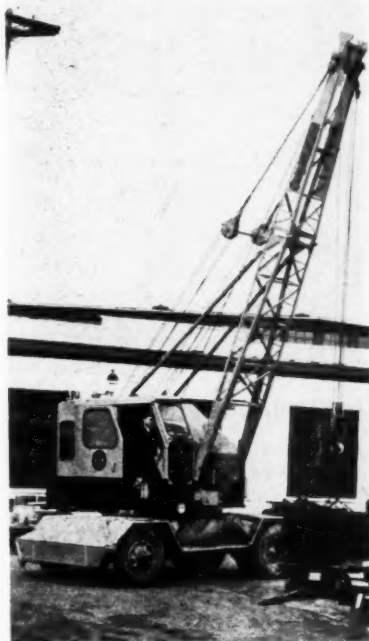
tors, Inc., Fairmont, Minn. The modifications include the raising of the main-frame cross members to provide generous clearance for operation in cases where welded rail has been unloaded between the existing rails.



TIE REMOVER

AN IMPROVED model of the Simplex Tie Remover, known as Model 80A, has been introduced by Templeton, Kenly & Co., Broadview, Ill. The device is essentially a ratchet-lever jacking mechanism with a long toothed rack bar which pushes the tie from under the rail. The device has been improved to permit attaching hooks under the rail instead of

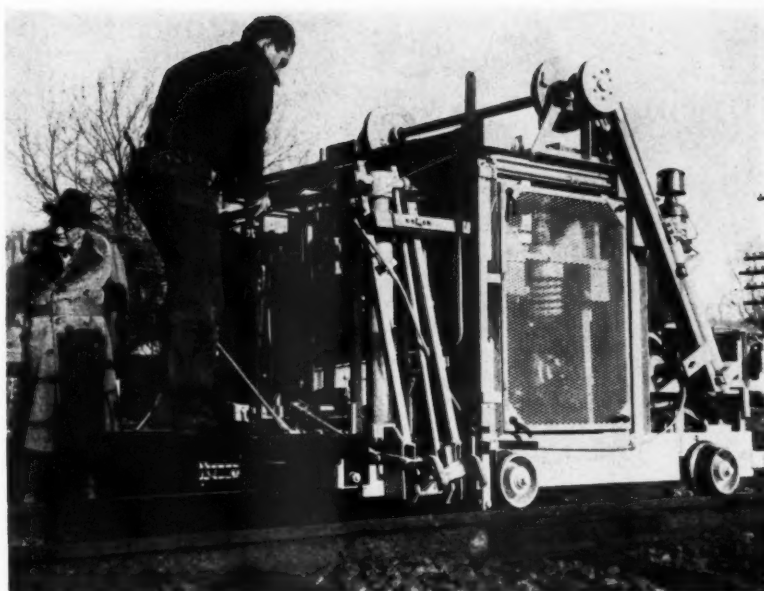
on top of the rail. The result is to provide a more direct pushing action with the rack bar remaining horizontal instead of tending to rise. Length of travel of the rack bar is 86 in. The Tie Remover is equipped with a roller at the end of the rack bar for easy movement along the top of the rail when moving between ties. The No. 82 Tie Replacer is a companion tool to the Tie Remover.



CRUISER CRANE

A NEW version of the Koehring Model 205 excavator, to be known as the 205 Cruiser Crane, has been announced by the Koehring Company, Milwaukee, Wis. One-man operated, the new machine has a 15-ton lift capacity, $\frac{1}{2}$ -cu yd digger capacity and a top travel speed of 21 mph. Gradability tests are said to have demonstrated the ability of the machine to negotiate 25 per cent grades in low gear. In addition to the 15-ton lift capacity (rate 85 per cent of tipping), it is said that the unit can lift a load of 12.7 tons (without outriggers) over the back and travel. Both travel and work are handled from one control position. One engine supplies all the power through two major shafts on the upper machinery assembly. The machine is equipped with large clutches of the internal expanding type. A 4-wheel drive arrangement has been provided for traction.

The chassis is of all-welded construction. The body is equipped with outriggers front and back for stationary lifting. The turntable swings on four adjustable hook rollers that are said to resist tipping in either direction. Power boom lowering is standard and the machine is equipped with safety boom-limit stops.



POWER JACK TAMPS KEY TIES

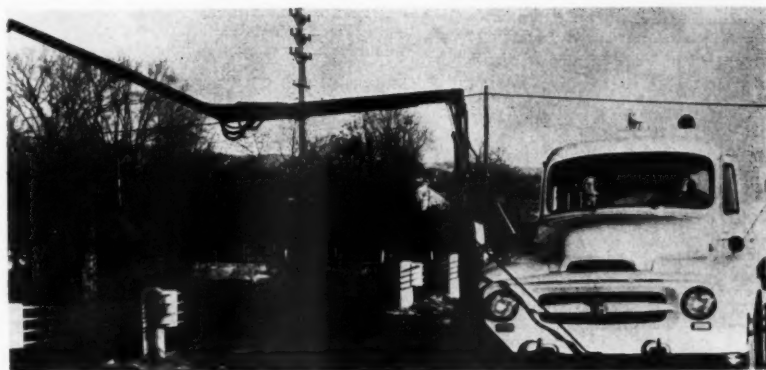
THE NORDBERG Manufacturing Company, Milwaukee, Wis. has announced a new Tamping Power Jack which combines the features of Nordberg's Power Jack and its Automatic Gang Tamper into a self-propelled machine for use in raising track and tamping key ties at the lifting points.

The unit is powered by a two-cylinder, air-cooled gasoline engine developing 13.3 hp at 2600 rpm. Two independently operated hydraulic rams force a shoe into the crib ballast and clamps engage the

two rails. One rail can be raised independently of the other for super-elevation and cross-level correction. The machine is equipped with a device for placing a standard level board in front of the operator which is used when bringing the two rails to a correct relative level.

The tamping portion of the machine employs the same vibrating mechanism as the Automatic Gang tamper. One tamping head carries four tamping bars, two inside of each rail. The tamping head is raised and lowered hydraulically.

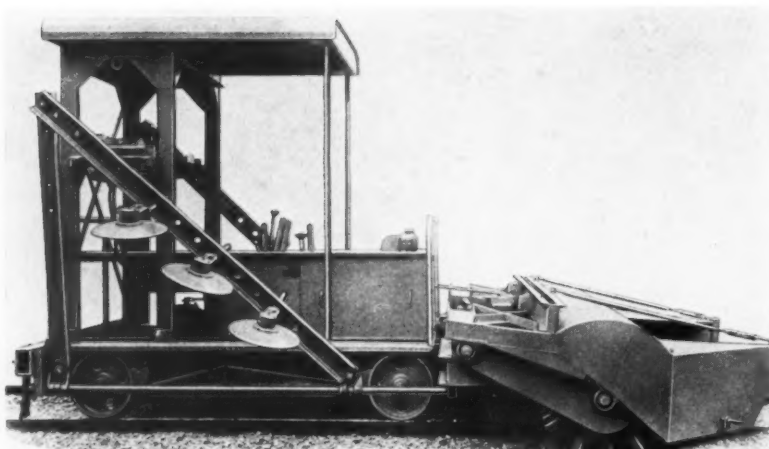
Hydraulically raised and lowered set-off wheels provide the means for removing the machine from the track.



TRUCK-MOUNTED BRUSH AND WEED SPRAYER

A FLEXIBLE-NOZZLE boom, known as the "Parkway Sprayer," operated from the cab of a dual-drive International truck, is said to permit easy, accurate spraying of roadsides for the control of weeds and brush, according to an announcement by International Harvester Company, Chicago. The boom, which can

be moved to a number of spraying positions while the truck is in motion, folds back into a vertical stack at the side of the truck when not in use. Knobs, extra foot pedals and vertical bars have been provided in the truck cab for control of boom and boom movements, pressure and boom position. The full range of spraying operations to left or right of the road are handled by the driver who uses the dual steering wheel and foot controls.



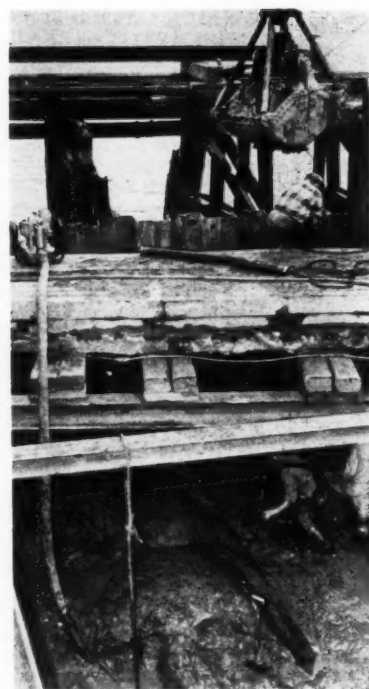
BALLAST MACHINE PERFORMS THREE JOBS

A NEW machine that discs, sweeps and equalizes roadway ballast has been announced by the Kalamazoo Manufacturing Company, Kalamazoo, Mich.

The unit, known as the Model 29 ballast distributor and sweeper car, is powered by a Ford Model 172, 4-cylinder, 60-hp gasoline engine with transmission allowing four speeds in either direction. Weighing approximately 4,500 lb, the machine has a hydraulically operated turntable for use when turning on the

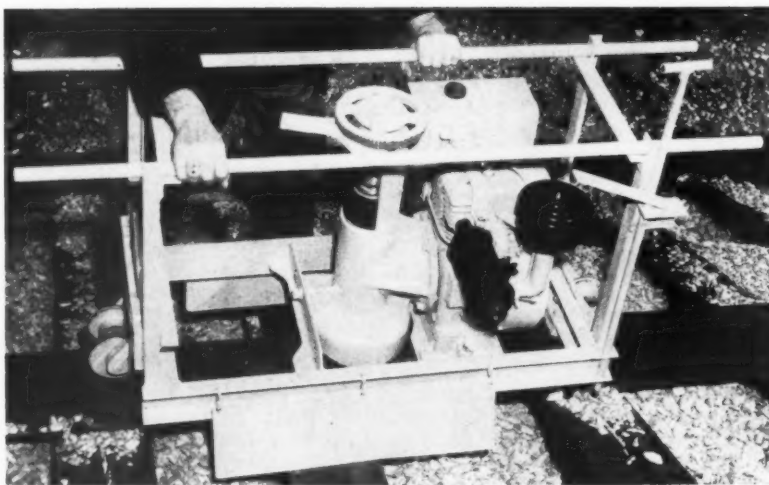
rails or being removed from the track. It is equipped with adjustable arms on each side which can be fitted with discs, shoulder shapers or ballast levelers. These arms are hydraulically raised and lowered.

The broom is mechanically driven and can be rotated in either direction. When the brush quills become worn, discarded air hoses can be used in replacement. Baffle plates, made from high carbon steel, house the broom. Through proper adjustment of the baffle plates, it is said that the ballast can be distributed where it is needed most.



DIAPHRAGM PUMP

A DE-WATERING pump for heavy-duty service, with a capacity of 5,000 gal per hour and capable of handling mud, muck, sand and sewage, has been announced by Homelite, Port Chester, N. Y. Of the diaphragm type, the pump is known as model 20DP3 and weighs 120 lb. It is powered by a Homelite single-cylinder, 2-cycle gasoline engine, operates at engine speeds between 1,500 and 3,850 rpm and is said to be able to run six hours at full capacity on one gallon of fuel. A throttle on the float-type carburetor can be hand regulated for adjusting the engine speed to different pumping conditions. Under full throttle, the pump makes approximately 63 strokes per min. The pump is reported to be completely self-priming and it is said that it will dry-prime itself up to 15 ft in 15 sec. It has a guaranteed suction head of 28 ft and a total head of 50 ft including friction. The pump comes supplied with 3-in fittings which can be adapted for use with 2-in hose. The gears are completely enclosed and the flapper valves in the suction and discharge fittings are self cleaning to prevent clogging.



RAIL GRINDER IS EASY TO OPERATE

A LIGHTWEIGHT machine for the surface grinding of rail has been announced by the Nordberg Manufacturing Company, Milwaukee, Wis. It is known as the Surf-Rail Grinder and is used on such jobs as surfacing rail ends built up by welding, removing mill tolerance, leveling cropped rail, grinding out welded wheel burns and removing humps at hardened rail ends.

This cup wheel grinder is said to have excellent alinement and to require little attention from the operator. Its direct and positive drive is enclosed and protected from grinding grit and is said to have a high ratio of stock removal to wheel wear.

The grinder rides on two flanged rollers. In operation, it is rolled back and forth along the rail over the surface to be ground. At the same time, it is rocked across the rail to provide the proper surface contour.

REDESIGNED TAMPING BAR

INCREASED resistance to wear and greater economy are features of a redesigned tamping bar to be used with the Jackson Track Maintainer, according to an announcement of the manufacturer, Jackson Vibrators, Inc., Ludington, Mich. The tamping tips of these new bars are of cast, high-carbon, heat-treated steel and are welded to the tamping bar. It is

possible for the user to hardface these cast tips before wear has progressed to the point where it would be too expensive to restore the original shape. It is pointed out that this hardfacing will be done only once and that it is a simple matter to cut off the old cast tip and re-weld a new cast tip to the bar shank. The upper, drilled portion of the tamping bar can thus be used over and over again. The tamping bars are interchangeable and are furnished in sizes to accommodate all gradations and kinds of ballast as well as all lifts of track.



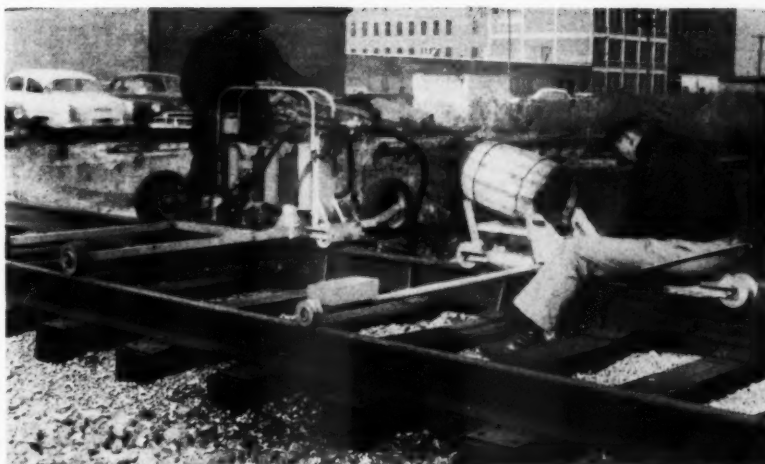
LIGHTWEIGHT RAIL SLOTTER

A NEW lightweight cross grinder, known as the "Bantam," for removing the flow at rail ends to prevent chipping has been introduced by the Nordberg Manufacturing Company, Milwaukee, Wis. The "Bantam" weighs only 80 lb, including its fuel supply, and uses slotting wheels 8 in. in diameter by either $\frac{3}{16}$ in. or $\frac{5}{32}$ in. in thickness. It is moved from joint to joint like a wheelbarrow and quickly locked into position at the joint for slotting.

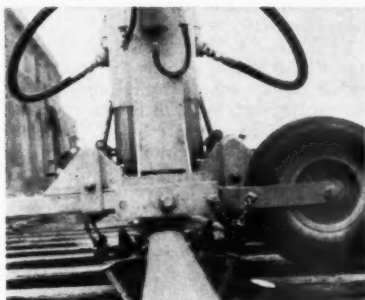


PORTABLE GENERATOR

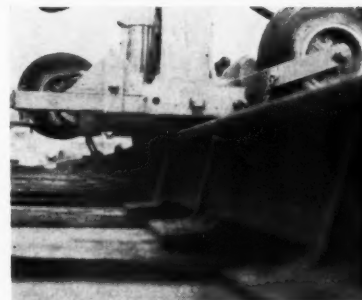
SMALL SIZE, light weight, close voltage regulation and generous overload capacity are reported to be among the features of a new 1500-watt, 115-volt, 60-cycle ac electric generator recently



SPIKES are distributed to tie-plate holes from spike-distributing carriage.



MAGNETIC positioner holds loose spikes in proper position for driving . . .



. . . REGARDLESS of whether spikes lean toward or away from the rail.

DUAL SPIKE DRIVER

A NEW spike-driving machine developed by Ramapo Ajax Division, American Brake Shoe Company, Chicago, now reported to have passed its service tests, is in production for early delivery. Known as the Racor DD4 Dual Spike Driver, the unit is designed automatically to position two spikes, loosely distributed to the tie-plate holes, for simultaneous driving. This is accomplished by two magnetic positioners attached to the machine, which may be set to draw the spikes to the proper vertical position for driving, whether they lean toward or away from the rail. Hand-set spikes may also be driven if they are set nearly vertical.

When driving, the operator sights over

one of the spikes to position the machine, and depresses a hand lever. This releases two heavy-duty pneumatic spike drivers which engage the spikes for driving. When driving is complete, the operator releases the hand lever and an air cylinder returns the pneumatic hammers and positioners to their normal position.

On the basis of field tests, the manufacturer recommends the following 3-man basic spiking crew: One man on a spike-distributing carriage; one man to operate the Dual Spike Driver; and one man to operate the air compressor. Either an on-track or off-track air compressor may be used. Field tests are said to indicate that the three-man crew can distribute and drive as many spikes as a gang of from 7 to 10 men with air hammers.

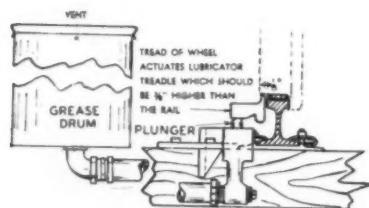
announced by Homelite, Port Chester, N.Y. Known as 35A115, the new unit has been developed to provide power for operating all types of portable electric tools and to provide standby power during emergencies. It weighs 90 lb and is equipped with four outlets, permitting operation of several tools simultaneously.

The generator armature is keyed directly to a single-cylinder, two-cycle gasoline engine. The dc winding, commutator and dc brush rigging have been eliminated and a simple Germanium

bridge rectifier has been supplied for excitation. It is reported that this combination of static excitation and static control limits voltage change to four per cent from no load to full load. Available as an accessory is an electro-mechanical idle control which is said to be easily installed. This control contains only three parts, a rectifier, a relay and a solenoid. It automatically switches the engine to idle speed when no current is drawn and returns the engine to full speed immediately when load is applied.



LUBRICATOR mounted on track ties supplies grease through holes drilled in railhead.



WHEEL TREAD depresses treadle actuating plunger of pump which forces grease through hose lines.

TRACK LUBRICATOR

A NEW track lubricator which eliminates the necessity for use of a distribution bar has been introduced by The Rails Company, Hoboken, N. J. Known as Type G-1, the lubricator is said to deliver the grease at exactly the point of contact of the flange of the wheel with the rail, through holes drilled in the rail head. In operation, the tread of the wheel actuates a treadle which in turn depresses the plunger of a grease pump.



CRACKS $\frac{3}{16}$ in or wider are filled with a special caulking gun.



RUBBERIZED tie coating is applied over the surface after the cracks are filled.



TRACTOR SHOVEL HAS POWER SHIFT

A NEW LINE of Speedall tractor-shovels with $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ -cu yd struck capacities has been recently announced by the Pettibone Mulliken Corporation of Chicago.

Known as models 125, 175 and 250, respectively, the shovels are said to embody new and revolutionary improvements, including power shift transmissions and planetary drive axles with a 5.7 to 1 primary reduction multiplied by a 3 to 1 reduction at planetary hubs, giving a 17 to 1 total reduction. These machines also

have full power control, a bucket leveling device and hydraulic accumulator.

The transmission allows instant shifts with full power and a selection of four speeds forward and four speeds reverse with actual operating speeds from 2½ to 24 mph. Reverse speeds are 30 per cent faster than forward speeds. The clutch speed is completely eliminated and the speed range is controlled by two hand levers mounted on the steering column.

A torque converter is said to eliminate the wear and shock of loading, provide for smooth application of power, prevent stalling under adverse conditions and improve traction.

TIES PROTECTED BY CAULK AND COATING

TWO NEW products have been developed by Bird & Son, Inc., to protect the exposed surfaces of ties and timbers from the deteriorating effects of weather. These products are known as Tie Caulk and Rubberized Tie Coating. They may be applied either by brush or by the spray method.

The manufacturer recommends that all cracks $\frac{3}{16}$ in or wider be first filled with the tie caulk. The rubberized coating can then be applied immediately to the entire exposed surface of the tie or timber.



MEDIUM-PRESSURE WELDING BLOWPIPE

A NEW medium-pressure oxyacetylene blowpipe, known as Oxweld W-45, has been introduced by Linde Air Products Company, a Division of Union Carbide & Carbon Corp., New York. Welding heads for the W-45 range in size from 2 to 300-cu ft per hr capacity. Welding-head extensions are available in 12, 15, 18 and 21-in lengths and head extensions of 10,

12, 20, and 24-in lengths are available for flame priming and descaling. Eight multi-flame heating heads with capacities of from 70 to 300 cu ft per hr are also available for use with oxyacetylene, oxy-propane and oxy-methane (natural gas) fuels. A new-type locking device, employing a circular spring contained in the head-coupling nut, permits welding heads to be secured in place quickly without the use of a wrench. A quarter turn of the coupling nut is sufficient to hold the welding head in place, and the heads can be swiveled to any convenient working angle without releasing them or extinguishing the flame. Stainless steel has been used extensively to provide strength and durability and to retard conduction of heat to the handle and internal parts.



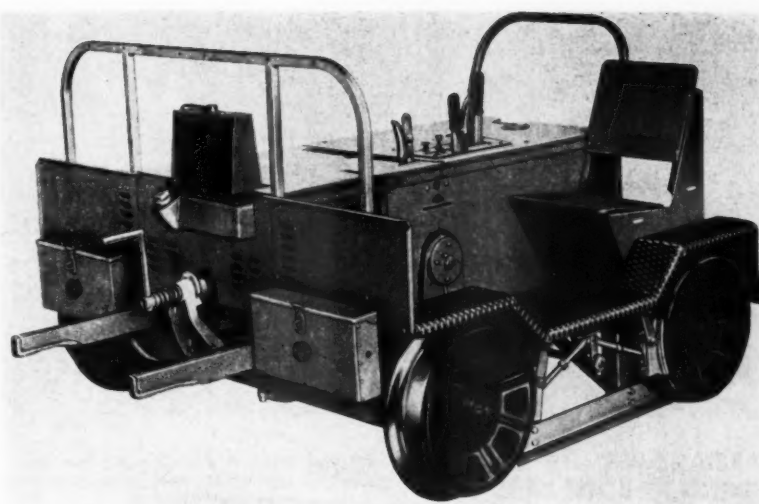
AIR IMPACT WRENCH HAS MORE TORQUE

A NEW air-operated reversible impact wrench has been announced by the Chicago Pneumatic Tool Company, New York. The wrench, weighing 20½ lb, is known as the CP-610 and is a 1½-in capacity, 1-in square drive tool. It is said to have 50 per cent more torque output than its CP predecessor and that maintenance costs are lowered due to a new clutch design which eliminates clutch jaw face rubbing. Also improved clutch efficiency is said to reduce air requirements by as much as 30 per cent.

PRESSURE TREATING PLANT IS EASILY MOVED

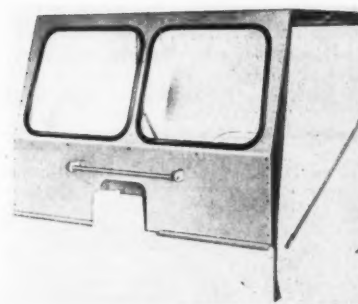
THE OSMOSE Wood Preserving Company, Buffalo, N. Y., has announced the development of a small wood-treating pressure plant that is said to be ideal for small operations, or where it might have to be moved from place to place.

The plant can be used to produce treated cross-ties, bridge timbers, construction lumber, car lumber, crossing signs and other similar items. It has a retort about 38 ft long by 4 ft in diameter, and has a per-charge capacity of 3000 bd-ft of timber.



REDESIGNED MOTOR CAR AND ALUMINUM CAB TOP

THE FM MODEL 101 motor car has been redesigned and modified according to an announcement of Fairbanks, Morse & Co., Chicago. The car now comes equipped with an 11-hp, single-cylinder, two-cycle, water-cooled engine. A steam condenser has been supplied as standard equipment. Engine shields and seat tops are easily removed to provide quick accessibility for engine servicing or adjustment. The car can now be equipped with a light-weight, aluminum cab top which has full-vision, safety-glass windows and is of two-section construction. The cab



top is available for all current models in the Fairbanks, Morse motor-car line.

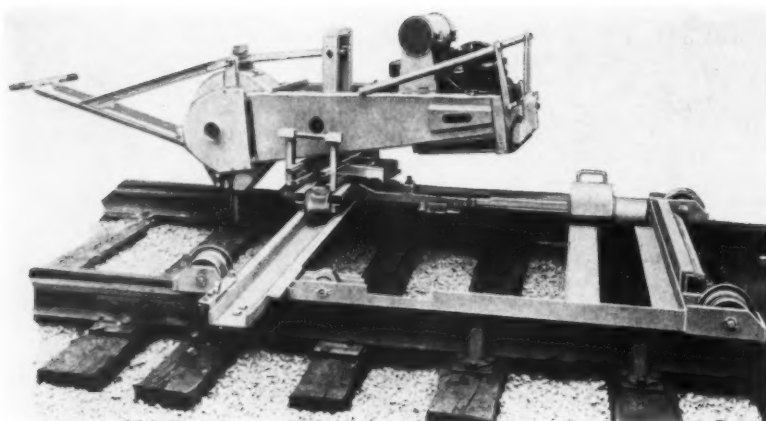


HY-RAIL MOTOR CAR

A COMBINATION highway-railway vehicle designated as the A34 Series A inspection motor car and consisting of a Pontiac station wagon with load-bearing type guide wheels has been announced by Fairmont Railway Motors, Inc., Fairmont, Minn. The car has a 205-hp V-8 engine, 4 doors, and seats 8 people on three cross seats. A fold-down section has been provided in the middle seat to permit access to the rear seat. Standard equipment includes a dual-range hydraulic transmission, underseat heater and

defroster, directional signals, outside rear-view mirror, power steering, power brakes, undercoating and Dualoc power-dividing differential.

Load is applied to the guide wheels by a rubber-cushion torque unit. These wheels are raised and lowered by small hydraulic cylinders and are held in position by a separate mechanical lock. The unit is equipped with a manual steering wheel lock with an indicator on the dash. The hydraulic system for the guide wheels consists of a combination electric motor and pump unit with controls at each end of the vehicle.



CARRIAGE PERMITS SPIKING AT BOTH RAILS

THE NORDBERG Manufacturing Company, Milwaukee, Wis., has developed a carriage for its standard Spike Hammer, which permits the machine to drive spikes at either end of a tie during tie-

renewal work. A run-off ramp has been incorporated in the machine to facilitate moving it to and from the track. The carriage is mounted on four flanged wheels for easy movement along the track. The hammer is so mounted on the carriage that it can be easily moved back and forth by the operator.



BALLAST REGULATOR, SCARIFIER AND PLOW

IMPORTANT improvements have been incorporated in a new model of the Kershaw ballast regulator, scarifier and plow. This machine, known as model 2FWG, is a product of the Kershaw Manufacturing Company, Inc., Montgomery, Ala. The new model is equipped with an automatic, centralized lubricating system of the push-button type, which lubricates 47 points, including the four main drive chains. A new-type, 2½-in axle and 2½-in demountable hub assembly are used. The jack-shaft assembly has been redesigned to include a 2½-in shaft complete with 2½-in double roller bearings. These bear-

ings are the same as those mounted on the machine axles. A new 4-wheel hydraulic brake system has been installed, complete with vacuum booster kits. An engine-hour meter has been installed on the dashboard to aid in maintaining regular maintenance cycles on the machine. A front windshield complete with electric windshield wipers and blades has been added.

A modified V-type reversible plow complete with hydraulic raising and lowering mechanism is mounted on the rear of the machine as standard equipment. The controls for this plow are mounted in the cab within easy reach of the operator. A ballast-toe line marker is mounted on the outside of each ballast-regulator wing.



DOUBLE-PURPOSE UNIT

A SNOWPLOW that can be converted into a blade spreader or backfill blade is now available as an attachment for the four-wheel-drive Model S-120 (4x4) International truck. The blade, which is a product of the International Harvester Company, Chicago, is controlled from the instrument panel of the truck. Positive hydraulic power is provided by a pump run by the fan belt of the truck engine. Six-foot, 8-ft or V-type blades may be ordered optionally. The blade can be centered for straight plowing or angled to either side. An automatic trip mechanism protects the blade and truck from damage by hidden objects. This trip mechanism may be replaced by a "stiff link" when converting the snowplow to a blade spreader or backfill attachment. The blade and A-frame assembly can be connected to or disconnected from the carrier by installing or removing two pins. The all-steel blade is welded throughout with formed ribs for reinforcing the heavy-gage moldboard. Reversible carbon-steel cutting blade and adjustable steel skid plates are attached to the moldboard.



SWITCH-POINT GUARD RAIL

A NEW guard rail for switch points, consisting of a 4-ft 9-in length of heat-treated rail securely bolted to the base plates, has been announced by Bethlehem Steel Company, Bethlehem, Pa. The head of the guard rail stands higher than that of the running rail. Its purpose is to shove wheels away from the point of the switch, thereby providing protection against derailments from sharp flanges and worn points. The beveled ends of the guard rail provide an easement feature which softens shock to car and lading. The guard rail is reversible so that it can be used on the right or left-hand side.

"THEY TELL ME" (said a chief engineer
to our salesman)

**"your spray cars
are really good"**

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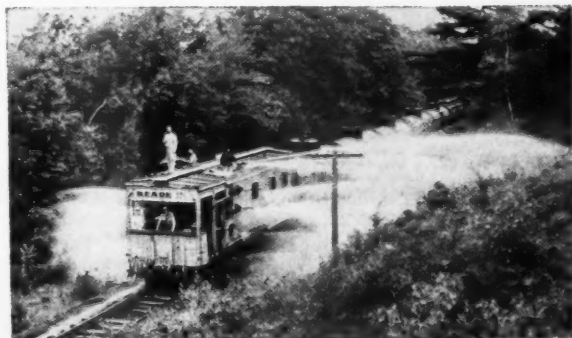
Perhaps you would like to review your program of weed and brush control with us. Our experience and data should prove of interest to you.

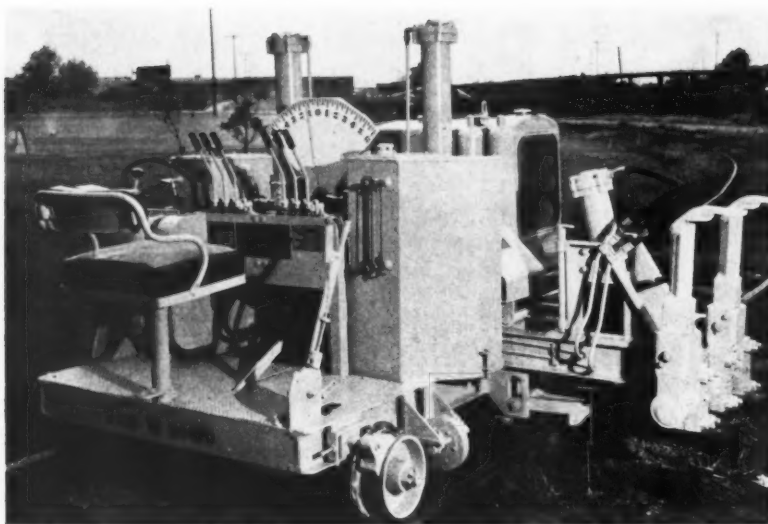


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IMPROVED JACK-ALL

A NEW model of the Kershaw Jack-All, known as Model GB, has been announced by the Kershaw Manufacturing Company, Inc., Montgomery, Ala. This one-man-operated machine has been provided with a heavier main frame and a side-set-off assembly with the set-off wheels installed on the main frame. Steel tubing with flexible connections is used for the hydraulic lines, which is said to prevent breakage due to vibration. The machine is self-propelling and a foot brake and brake lever for locking the brakes when the machine is parked have been added. An electric starter has been provided for the air-cooled engine. The machine has

been made free-wheeling, to prevent locking of the wheels when the hydraulic valves are neutralized.

Among the operating features which have been added is a mounted level board, or "pendulum" level, to insure more accurate cross leveling of the track. Twin tamping feet have been mounted on each side of the machine to permit tamping of two ties simultaneously. One of these feet is removable so that only one tie may be tamped when so desired. The tamping feet are provided with hydraulic controls and are operated by a reciprocating hydraulic ram. Automatic, self-adjusting rail dogs have been added which engage the rail when jacking begins.



TWO MOTOR GRADERS

A POWER-SHIFT transmission, which is reported to permit quick shifts under full load and wide-open throttle, is a feature included in the new Model 7-D and Model 6-D motor graders manufactured by Huber-Warco Company, Marion, Ohio. The new machines are rated

at 140 and 100 hp, respectively. Standard on both graders is a torque converter and hydraulic-booster steering. The latter item is said to retain the positive feel of manual steering and reverts to manual steering automatically in case of a power or hydraulic failure. Both models are equipped with a power sliding moldboard hydraulically operated from cab.



IMPACT WRENCH WITH CONTROLLED TORQUE

THE TORSION-BAR principle has been applied to torque control of a new Impactool introduced by Ingersoll-Rand, Air Tool Division, New York, this is an air-operated nut-running tool which is reported to impact the nut to a desired preset torque for precision tightness and then automatically shut itself off. The Impactool operates at normal speed and power while the nut is being run to the required torque. However, when this torque is reached, causing the nut-running resistance to become equal to the stress preset in the torsion bar, the impact mechanism rebounds instantly and trips a rubber-faced shutoff valve. It is reported that the torque setting is simple, remains constant and is consistently accurate. The tool comes in two sizes: 5040T with an adjustable torque range up to 90-ft lb and a rated capacity (high-strength bolts) of $\frac{3}{4}$ in; and 5340T with an adjustable torque range up to 550-ft lb and a rated capacity (high-strength bolts) of $\frac{3}{4}$ and $\frac{1}{2}$ in. It is reported that the smaller size is especially useful for general work, while the larger size is adequate for running high-strength bolts used in bridge and building work.

MAGNETIC INSPECTION KIT

A PORTABLE magnetic particle inspection device which requires no electrical power has been developed by the Magnaflux Corporation, Chicago. Known as the Magnaflux YM-5 Yoke Kit, the device is designed to locate surface and fatigue cracks in magnetic parts and members. It is equally effective for both Magnaflux and Magnaglo use. Since electrical arcing is impossible the device is said to be practical for the inspection of critical parts and welds in hazardous areas. The new Magnaflux kit comes complete with a metal storage and carrying case and weighs 22 lb. The yoke legs are hinged and the angle-cut tips rotate so that good magnetic contact can be made on parts of almost any shape. The permanent magnet elements are of Alnico and a new magnetic circuit has been developed which is reported to give the YM-5 an especially effective magnetizing power for its weight. This is said to provide a magnetic pull of over 40 lb on a flat surface as against a weight of the yoke itself of 5 lb. Dusting materials are included in kit.

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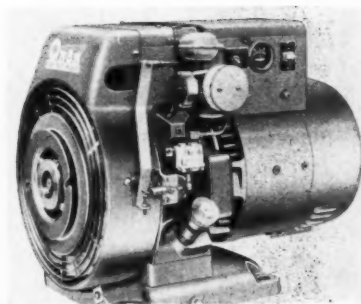


SPRING SUSPENSION FOR TAMPING HEAD

VIBRATION, which reportedly reacted heavily on the entire machine when the tampers were down, is said to have been practically eliminated in the Jackson Track Maintainer with the introduction of a leaf-spring type of crossarm suspension for the vibratory motors. It is said that the leaf-spring type of suspension permits the motors to maintain contact with the ballast under appreciable force, yet with a force that is resilient or yielding through the action of the spring. This action is said to have eliminated excessive dampening of the motors and keeps electrical loads correspondingly low.

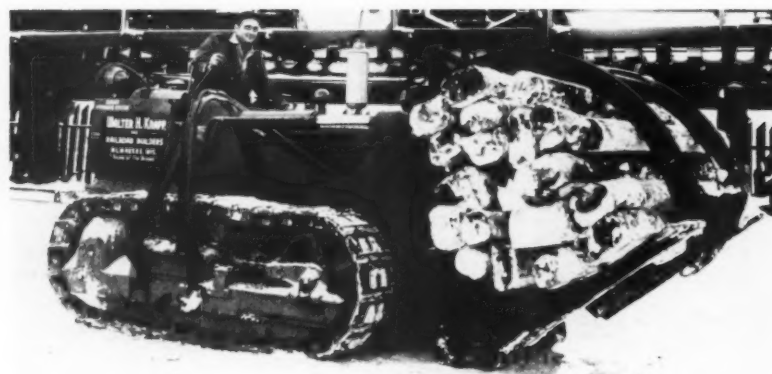
It is explained by the manufacturer,

Jackson Vibrators, Inc., Ludington, Mich., that, as a secondary result of adopting the spring-type of crossarm suspension, the resilient but firm pressure exerted by the springs permits the tamping bars to move laterally in the ballast toward the rail more uniformly. This is said to provide directional control of the tamping bars and assures uniform ballast consolidation over the entire normal tamping area. It is stated, in this connection, that maximum compaction will occur directly under the rail due to the direction of travel of the tamping bars. It is also stated that, since the motors have been freed from excessive electrical load, due to the spring-type suspension, it has been possible to increase their vibratory energy output.



HEAVY-DUTY GENERATING PLANT

AN ELECTRIC generating plant for heavy-duty service has been announced by D. W. Onan & Sons, Inc., Minneapolis, Minn. Known as model 2LK the new plant is reported to produce 2,000 watts of 60-cycle ac current at 1,800 rpm (or 1,500 watts of 50-cycle) in all standard frequencies and phases. Model LK is powered with an Onan single-cylinder, air-cooled, 4-cycle gasoline engine with Stellite-faced rotating exhaust valve direct connected to a blower-cooled Onan generator for permanent alignment. The unit is available in completely self-contained manual-starting models equipped with a recoil rope starter, mounted fuel tank, muffler, air cleaner, terminal box and vibration box and vibration dampeners. It is also available in electrically cranked remote starting models equipped with mounted control box, exhaust tubing and muffler, air cleaner, separate fuel tank and battery cables. All models are equipped with radio shielding on high-tension wire as standard equipment. Optional equipment includes carrying frames, 2-wheel dollies, automatic controls, emergency line transfer controls, receptacle plate kit and gas carburetors.



SKID-LOADER FOR HANDLING TIES

INTERNATIONAL Harvester Company, Chicago, has introduced an attachment for use with the International TD-6, TD-9, TD-14, and TD-18A tractors, which is known as the International Drott Skid-

Loader. This machine is designed for scooping up scattered ties or lifting them out of the pile. The two bottom tines of the Skid-Loader slide under the ties. A patented hydraulic "top-grab-arm" then closes down and holds the ties securely. It is said that a shoe at the base of the loader enables the machine to move

NEW, DEEPER OIL PANS

ALL LE ROI two-stage portable compressors and Tractairs are now manufactured with new, deeper oil pans according to an announcement of the Le Roi Division, Westinghouse Air Brake Company, Milwaukee, Wis. The announcement states that the new oil pans will permit portable operations up to angles of 20 deg and Tractair operations up to angles of 25 deg when working in rugged terrain. These are more than double the previous operation angles of these machines. The 365-cfm and 600-cfm Le Roi compressors have been equipped with these deeper oil pans for several years. Smaller capacity single-stage compressors have same oil pan as usual.

heavy loads over rough terrain with little strain on the tractor or operator. Capacity of the machine ranges from 3,000 lb for the TD-6 to 9,000 lb for the TD-18A.

(More Products on page 85)



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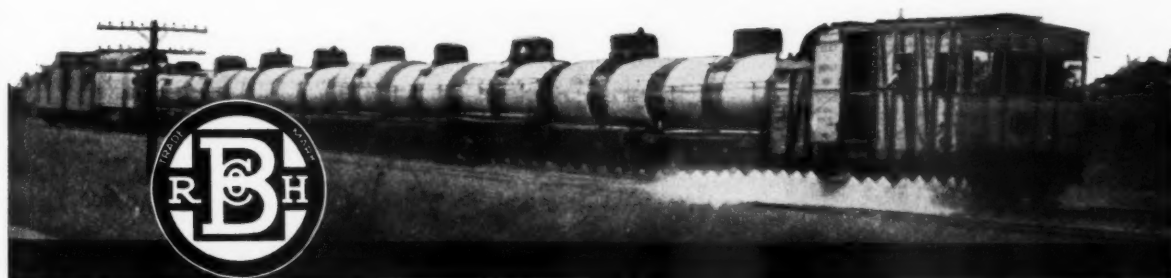
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WHAT'S THE ANSWER? ...

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Diesel Facilities at Terminals

At terminals where both diesel road locomotives and switchers are handled, under what circumstances is it desirable to provide separate servicing facilities for each type of power?

Separate Facility Unnecessary

By C. J. BONNEVIER

Engineer of Buildings, Chicago,
Burlington & Quincy, Chicago

At locations where both diesel road locomotives and switchers are serviced, it is done with the same facilities. In discussing the matter with our mechanical officers, they have made clear to us that, from a mechanical standpoint, assuming that stall or track room is available for a road diesel, there is no reason why the same facilities cannot be used for switch engines.

In general, the same procedure is followed in servicing and maintaining all types of diesel locomotives, consequently there seems to be no particular advantage in establishing separate facilities.

Possibly the only facility which might be different for the two types of power is in the arrangement for sanding. Some switch engines are sanded through low sand boxes located at about the engine-bed level at either end of the engine while others are sanded through the top. Most road locomotives are sanded through the sides. One sander can be modified without difficulty and arranged to take care of all types of engines.

Auxiliary Facility for Relief

By W. H. GILES

Assistant Chief Engineer System-
Construction, Missouri Pacific,
St. Louis, Mo.

When a railroad is completely dieselized and the geographical arrangement of its primary lines will permit, good practice dictates the pooling or assignment of diesel passenger, freight and road-switching units by districts. This permits the scheduling of the unit assignments

in train operations so that the major locomotive-servicing facility can be situated at a large terminal where there is a consolidation of supervisory and working forces, including operating, mechanical and maintenance of way.

Generally, the servicing facilities consist of what is usually referred to as inside and outside facilities. Where separate outside facilities are provided and such facilities are operated independently, the major portion of the units requiring servicing (75 per cent to 90 per cent) are serviced at the outside facility.

When the major facility is situated at a large terminal and the preponderance of units received are road units, either freight or passenger or both, and it is necessary to service terminal-switching units at

the major facility, a separate servicing facility for terminal switchers can be justified.

This statement needs some qualification: The outside road servicing section of the major servicing facility is assumed to be a complete unit, including mechanical washer and appurtenances, inspection pit of sufficient length to accommodate the maximum number of coupled units received, together with outlets for supplying lubricating oil, a platform of sufficient length to accommodate the same number of coupled units with outlets for supplying fuel oil and generator and radiator water, a sanding facility and ready tracks.

When the road unit requirements exceed the capacity of the principal facility, an auxiliary facility for servicing switchers will relieve the principal facility. If the auxiliary facility is situated in close proximity to the principal facility, the mechanical forces may be employed at both of them thereby increasing efficiency and expediting the han-

Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the June Issue

1. What is the function of local maintenance-of-way forces in the overall public-relations program of their railroad? What can they contribute toward improving these relations? Explain.
2. When passenger stations are modernized, what type of lighting is best adapted for use in waiting rooms? Does the size of the room affect the type of fixture used? What intensity of illumination should be maintained? Explain.
3. It has recently been said: "We need more grinding and less welding in crossing and frog maintenance." How does one determine whether a crossing or frog should be ground or built up by welding? What factors affect this decision? Explain.
4. What are the economic advantages

of timber-concrete composite decks for highway overpasses? Disadvantages? To what particular type of structure is this type of deck best suited? Explain.

5. What are the advantages in the use of self-guarded frogs when compared with the use of independent guard rails? Disadvantages? Has the introduction of diesel power affected the use of self-guarded frogs? Explain.
6. When repairing or installing water lines that will handle drinking water, what precautions must be taken to insure that their interiors are not contaminated? Under what circumstances, if any, may it be necessary to sterilize such lines before they are placed in service? How best may this be done? Explain.

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What's the Answer (Cont'd)

dling of those units which are more important.

The auxiliary facility may be lim-

ited to requirements for switcher servicing. This results in shorter lengths, for the hand-washing platform, the inspection-pit and fuel-oil and water-dispensing platform, and limited sanding outlets.

The auxiliary facility may be

used to relieve the principal facility by utilizing it for servicing individual road-switcher units since the contour of the road switcher is similar to the terminal switcher and cannot be successfully cleaned by the mechanical washer.

Positioning Piles in Swinging Leads

What are the best methods of securing accurate positioning of piles when they are driven with the aid of swinging leads suspended from the boom of a derrick or crane? Explain.

Place Guide at Cutoff Line

By M. J. HARP

Bridge & Building Supervisor, Missouri Pacific, Poplar Bluff, Mo.

The best method of driving piles with the aid of swinging leads suspended from the boom of a derrick or crane is to build a guide out of 12-in by 12-in timber and place this guide at about the cutoff of the piles. Anchor the guide to the old bents of the bridge you are rebuilding so it will not get out of line. Then dig a hole in the ground at least 4 ft deep for each pile. This hole should be lined for the batter desired for the pile so the bottom end of the pile will not slip out of

line. Then set all the piles in the bent before any driving is started to be sure they are all in line.

Watch the leads at all times when driving to see that the line does not become loose. Loosening of the line will let the leads get out of plumb and drive the pile out of line.

No Job for an Amateur

By L. P. DREW

Assistant Chief Engineer, Union Pacific, Omaha, Neb.

Driving piling with leads suspended from a derrick boom is the most difficult method to secure accurate spacing and batter. This is no job for an amateur and the most

experienced and best pile-driver foreman and men should be used.

The most effective method of securing accurate spacing and batter is to use templates constructed of heavy material, either steel angles and channels or heavy bridge timbers. The upper template should be set on top of the rail in a definitely fixed position. The lower template should be set at the ground line or streambed or floated on the water and held to exact position with calculated batter so that piling can be set in the two templates and be held in position regardless of the position of the leads.

Considerable assistance for holding the bottom of the leads in position can be given with the use of tag lines. This will permit accurate batter at the top. Regardless of the method used, the progress of driving must be carefully watched so that, if a pile starts out of line, corrective measures can be taken immediately; otherwise, accurate positioning will not be secured.

Tandem Operation of Tamping Machines

Production-type tamping machines are sometimes operated in tandem, tamping alternate ties. Does the progress of the work and relative cost of this method justify its use? Are there any disadvantages?

Economical and Satisfactory

By J. E. GRIFFITH

Assistant Chief Engineer, Maintenance of Way & Structures, Southern, Knoxville, Tenn.

The use of tamping machines in tandem is unquestionably the most economical and satisfactory method of operation in out-of-face timbering and surfacing. With the same number of jacks and men, the footage or track tamped will be almost doubled during the on-track time. The quality of work is in no way reduced. A study of this method will readily reveal that the only additional force requirement is that necessary to operate the additional tamping machine.

The prime purpose of a railroad

is to move passengers and freight. The grouping of machines reduces traffic delays in a number of ways. The time required to make a runoff is less where two tamping machines are used than it would be where there is only one. It takes no longer for tandem operation to clear traffic than if there were only one tamping machine in the gang. It naturally follows, that, by reducing the number of locations where traffic delays occur as a result of maintenance forces, the entire railroad operation becomes more efficient.

The grouping of tamping machines has a tendency to create competition between the machine operators. A poor operator will be readily exposed. By the same token, if a machine is failing to produce

the highest type of tamping, a comparison of work will readily expose the machine which failed.

The problem of supervision is reduced by grouping machinery because a supervisory officer can give more detailed attention to a group of machines than he would be able to give if the machines were scattered and required considerable travel time in moving from one force to the other.

The grouping of machinery also results in better machine-maintenance practices. The mechanic is naturally more readily available for anything that might happen to a group of machinery than he would be if the machines were scattered. Therefore, the "downtime" is considerably reduced. The problem of available spare parts for machine maintenance is also more easily handled.

Where tamping machines are used in tandem, the force involved is by no means seriously handicapped when a machine failure does occur. If only one machine is used and it fails the entire opera-

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What's the Answer (Cont'd)

tion of the force has to be altered to suit the emergency, whereas, in tandem operation the total footage covered would be reduced by the failure of one machine but the general program would be carried on until emergency repairs are made.

It is my belief that the economic operation of even more than two tamping machines per gang may be justified under certain conditions.

Tandem Operation a Policy

By H. F. REILLY

Engineer Maintenance of Way, Lehigh Valley, Bethlehem, Pa.

It is our policy to operate production-type tamping machines in tandem on most of our main line, particularly where it is possible to detour trains and have complete, or almost complete, use of the track being worked. The organization of a track-raising gang is predicated on the equipment available, the number of ties to be renewed, height of raise and the number of grade crossings within the working limits—but the production of the gang cannot exceed the tamping capacity of the power tamper or tampers.

In track raising, when tie renewals are made and additional ballast is applied, many power machines and tools are used in addition to the power tampers. These include machines such as spike pullers, tie pullers, crib scarifiers, tie inserters, tie nippers, spike drivers, power jacks, ballast distributors, ballast dressers and power track liners. The tamping of track with one power tamper of any type does not produce enough tamped footage to utilize the full productive capacity of most of these other machines. Tandem operation of production-tamping machines will progress track raising at a tamping speed that will match the production powers of one crib scarifier, power jack, ballast distributor, ballast dresser and power track liner. Additional spike pullers and drivers, and tie pullers, nippers and inserters, should be used as conditions warrant.

In track-raising or surfacing operations where tie renewals are not required, it is also economical to use tamping machines in tandem in preference to single-tamper opera-

tion. This is true not only because of the benefits gained by the full use of power jacks, track liners and ballast dressers, but also because, with double-tamping production, there is a 50 per cent reduction in the number of runoffs to be tamped. There is also a like reduction in cost of flag protection, supervision and some of the labor costs involved in the operations because full capacity of various power machines is attained.

In tandem operations we have found that production in tamping has doubled over that of single-tamper operations with a cost increase of only about 50 per cent.

Where mobile gangs are available and long stretches of track are to be worked, it does not seem to be too far afield to envision the programming of track raising within traffic detour limits of about 10 miles. Then, with the operation of two tandem-tamper gangs, starting one from each end of the detour and working toward the middle, advantage could be taken of the savings that would result by doubling production within fixed detour limits.

Pattern Operation to Suit Gang

By G. W. MILLER

Engineer Maintenance of Way, Eastern Region, Canadian Pacific, Toronto, Ont.

The use of production-type tamping machines operating in tandem, tamping alternate ties, would generally seem justified for the reason that there is a saving in labor when they are operated in this manner.

The same number of men required to raise the track ahead of one tamper can perform the amount of work required for two tampers, effecting a saving of one raising gang. There is also the advantage, when machines are operating in tandem, of having two qualified machine operators available to help each other effect and expedite running repairs to their machines in case of breakdown, and also expedite removal of machines from track when working on "live" track. In addition, two machines working together can be run to a siding to clear trains in less time than they could if working some distance apart. Track tamped by two machines, tamping alternate ties, produces as good results as track tamped by individual machines and, by reason of the fact that there is only one gang to organize, the work is generally done more effi-

ciently. Supervisors assigned to look after one machine can also look after two machines. Production from two machines working together is usually as good if not better than that secured from other methods.

Generally there are no important disadvantages in working the machines in tandem except in cases where a very small gang is employed and the organization is not large enough to keep two machines working to full capacity. On small jobs where it is desired to use a small gang, such as doubled-up section forces, to make a running surface lift of 2 to 3 in, then it might be advantageous to operate tamping machines singly. In other words, pattern the operation to suit the size of gang available and program of work to be undertaken.

Get Full Utilization of Machinery

By H. W. KELLOGG

Engineer of Track, Chesapeake & Ohio, Detroit, Mich.

Varying conditions on different railroads, and even varying conditions on different divisions of the same railroad, make it impossible to formulate any standard procedure for the operation of production tamping machines in tandem. Things that must be considered are whether work is on single or double track, amount of traffic, height of track raise, condition and type of ballast and whether or not ties are being installed as the track is raised.

A track-surfacing operation is dependent upon the speed with which the tamper operates. I have found that on a double-track railroad where traffic is detoured all day with no installation of ties, one force using two tampers in tandem can lift as much track per day as two separate forces, each with the same number of men, using only one tamper with each force. Also, when these forces are fully mechanized, you do not get full utilization of the other equipment if only one tamper is used. Under these conditions, it is possible to double the output per man-hour per day using tampers in tandem.

However, on a single-track railroad, where traffic is heavy and it is necessary to clear many trains, the operation of tampers in tandem will not produce double the amount of track surfaced per day over the use of a single tamper. Under these conditions, when two tamping ma-

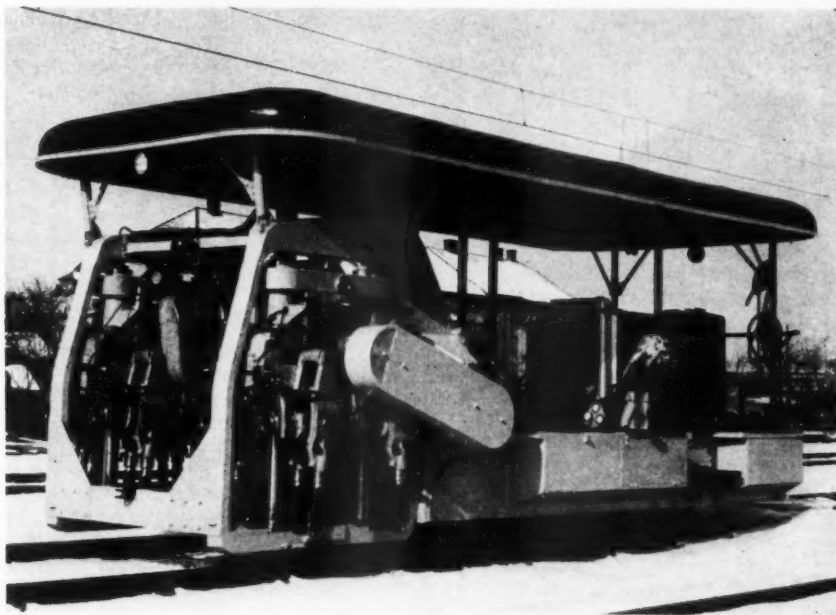
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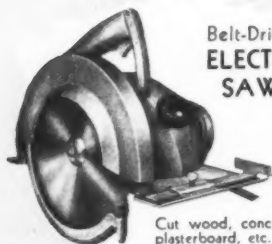
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What's the Answer (Cont'd)

chines are available, the most footage per day and the best man-hour ratio can be obtained by using a small force with each tamper at a separate location. Depending upon physical conditions of the railroad, these locations should be far enough apart to not conflict with train operation. The reasoning is

that when it is necessary to hold the tamper in the clear for a considerable length of time to allow passage of several trains, the men have time to do much of the lining, equalizing of ballast, etc. Under these conditions, a fully mechanized surfacing force, using tampers in tandem, would not get full utilization of the machinery. This is the first consideration in the planning of any maintenance operation.

Inspecting Track From Moving Trains

When making inspections of the riding qualities of track from moving trains, what are the physical indications of irregularity of line? Of surface? Of both line and surface? How can they be distinguished from the normal reactions of the moving equipment?

This Is an Art

By C. C. VAN STRATTEN

Roadmaster, Missouri Pacific, Jefferson City, Mo.

The ability to detect irregularities that affect the ride is an art that you do not learn in a few trips over a territory. There are many things than cause an uncomfortable ride that are not due to irregular surface, line, gage, etc. For instance, these items include speed on curves over and above that set up as the maximum, "lateral" in equipment, out-of-round wheels and many other things which are not the responsibility of the track-maintenance department.

To one that it not skilled in checking riding conditions from a moving train and wants to improve himself in this matter, I would suggest that he ride a train over a certain territory making notes of the conditions. These notes should include a "by-line" as to what appeared or seemed to cause the condition. The following day, if possible, go by motor car and personally check these locations for cross level, line, gage, etc., and see for yourself just what the conditions are. This will help show just what conditions affect the ride most, and to what extent the track must be out of cross level or line to cause a bad ride. The effect of conditions varies, of course, with the speed at which trains operate over the track.

After a few trips over a territory you become familiar with places that are chronic offenders. You can then detect the irregularity in an instant from the back of a train.

The rear of the train is the best place to ride for the purpose of watching the track or checking. It is there that you may see the location of mileposts and also to see the track, which, in many instances, will show some slight irregularity that you do not even feel while riding.

Track that is out of cross level is usually the easiest to detect, especially at high speeds. This defect is more easily detected from heavier equipment than lightweight equipment. However, small irregularities in line are more readily detected from lightweight equipment.

Irregular line, even if slight, can be seen from the rear of a moving train, and track that is out of cross level will have irregular line. This cannot be detected as readily by eye while moving around curves as on tangent track but it will be felt in the ride more readily than on the tangent.

Each piece of equipment rides differently over the same track and different speeds give you a different ride. A car that whips backward and forward, especially on tangent track, and then rides fairly well around the curves usually has too much lateral. Many pieces of equipment will ride with a bouncing or bucking motion which is not the fault of the track. Wheels or brakes will cause a jerking or bucking motion of a car when the air is being applied.

To completely determine the riding qualities of track a person should have a piece of equipment to ride that is in excellent condition, operated at exactly the speeds designated for the track in question.

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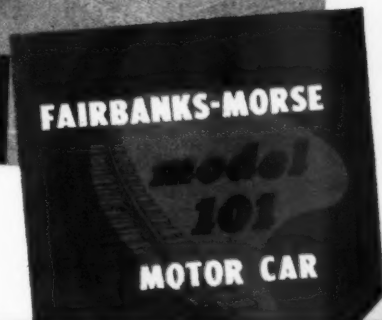
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RAILWAY TRACK and STRUCTURES

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What's the Answer (Cont'd)

This would give a person the most accurate gage of conditions. But, since all equipment is not new and all track is not perfect as to maintenance, the trackman must practice and know from experience and observation the things that need correction to maintain the best riding condition. There is no substitute for actual on-the-ground experience and familiarity with all the conditions involved.

Certain Qualifications Required

By J. P. DATESMAN

Engineer of Track, Chicago & North Western, Chicago.

The checking of the riding qualities of track calls for certain qualifications on the part of the person making the inspection.

The first important factor is the ability to distinguish between normal and abnormal movements of the car or locomotive on good track when compared with such movements on track that does have irregularities of line and cross level.

Track inspection can be made from steam or diesel locomotives, but it is my personal opinion that a much closer inspection can be made from the rear end of a train in a coach, Pullman car or observation car. The person making the inspection should not stand on the rear platform of any car, but should stand inside of the car so that he can observe lateral and vertical movements while watching the track.

Track that is out of line, cross level or both, will generally react about the same as far as the movement of the car is concerned. In other words if the movement of a car is determined by a deflection of line or a variation in cross level, it will cause a rolling movement laterally. It might be stated at this point that track that is out of cross level is also generally out of line due to the rolling movement of cars, which throws the track out of line.

The man who is experienced in checking the riding qualities of track can generally distinguish the difference between lateral or rolling movements of the car, caused by track conditions, when compared with those from the normal reactions of the moving equipment. In many cases he can actually observe the out-of-line or cross-level

conditions as he passes over them and be in a definite position to judge what is causing so-called rough riding.

The riding of cars on curves has to be watched very closely to enable one to distinguish the difference between riding conditions caused by track irregularities and those caused from the centrifugal thrusts of excessive speed and lateral movements caused by defective ride-control units on the cars. It is practically impossible while riding on curves in the body portion of the train to distinguish the difference between car reactions that are caused by track irregularities, excessive speed, or defective ride-control devices on the car itself. If an inspector is riding on the rear end of the train he can generally come to a decision as to the cause of rough riding.

Line irregularities are very visible when riding in a diesel locomotive. You are some distance above the track and can see the out-of-line locations in advance of passing over them. The same applies to a person riding on the rear end of the train, although to a somewhat lesser degree, as he is generally not as high above the track and consequently the out-of-line locations do not show up as well.

It is very evident that a man should be experienced in checking the riding qualities of track because he will then be able, in most cases, to distinguish between irregularities caused by track conditions and those caused by ordinary or abnormal car movements.

Equipment Reaction an Indicator

By C. HALVERSON

General Roadmaster, Great Northern, Willmar, Minn.

Physical indications of irregularities in the line and surface are readily detected from the rear of a moving train. From this point it seems that the best check of the riding qualities of the track can be made.

It can be said that some types of equipment will ride better than others. Nevertheless, if you are riding over the trucks on the rear of a moving train any irregularity in the line or surface, or a combination of both, can be detected by the roadmaster or supervisor. However, such conditions are best reflected in the reaction of the equipment.

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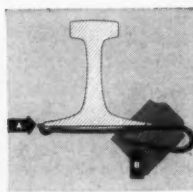
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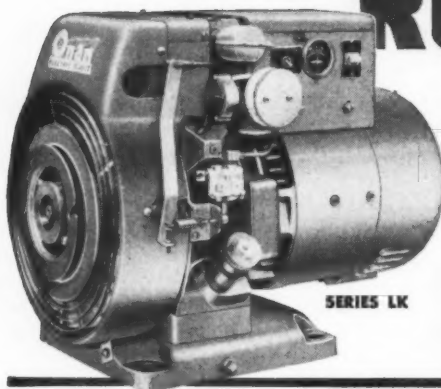
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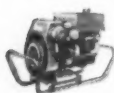
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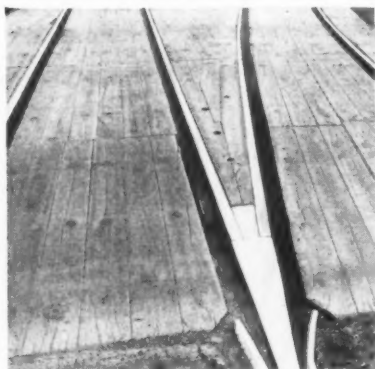
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What's the Answer (Cont'd)

our railroad serves, winter conditions are quite severe and temperatures will get down to as low as minus 30 deg. During these low temperatures, we are confronted with some heaving of track. This necessitates the shimming of such places with wooden track shims to correct irregularities in the cross level.

To determine at what locations and to what extent such heaving is taking place it is necessary to make frequent trips over the track on the rear of moving trains, to pick out locations where the heaving of track may affect the riding qualities to the extent that speed must be restricted until such time as corrections have been made. Such places are picked out by the roadmaster or supervisor and passed on to the section forces for immediate correction.

Irregularities in line and surface are readily apparent to the roadmaster or supervisor riding the rear of the train, but the reaction of the equipment moving at normal speed determines the extent that any such irregularity can affect the speed of such trains.

Inspect From Rear of Train

By T. L. KANAN

Assistant Engineer of Track, Colorado & Southern, Denver, Colo.

In making inspections of track irregularities from moving trains the supervisor should place himself at a most convenient spot at the rear of the passenger train. This should be where he has good visibility so that he can get a clear view of the riding condition of the railroad being checked.

Irregularity of line can be noticed by eye from the rear end of a train as well as some indication of cross level. The greater the speed the more violent the thrusts that are received. The supervisor or roadmaster should be very familiar with the territory being checked. Normally he will know where there are soft spots or track that is giving the most trouble. The thrust of the car or truck will indicate these spots with a side motion for line and a side and vertical motion when track is out of both line and cross level.

Of course, the lighter streamlined car does not give us as good a reaction to rough track as the heavier, or old-style, equipment. Certainly,

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Test plots 3 years ago...
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Many railroad engineering departments are turning to *self-application* for weed control

for main lines, branch lines, secondary main lines and yard application.

► Advantages of Self-Application

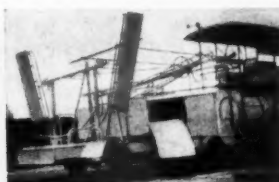
These engineering departments have studied the problem of weed control and have found they can cut costs by self-application. Self-application can be made when desired and needed, and can be made when convenient to other maintenance schedules. *Weed control is being tied in with road-bed maintenance programs.* In this way, application costs are actually reduced! Shown below are examples of actual costs by self-application.



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What's the Answer (Cont'd)

the individual inspecting the track has to take this into consideration when checking track as the truck may be riding on the side bearings rather heavily or may be stiff in its action around curves. With frequent riding of trains the individual can distinguish whether it is the equipment he is riding or the track conditions that are not good. A combination of these two factors can also be readily distinguished.

Cleaning Ice From Building Downspouts

What is the most effective way to clean out the downspouts of buildings when they have become filled with ice? What precautions can be taken to prevent this condition from developing? Explain.

No Satisfactory Method

By C. E. GARCELON

Superintendent Bridges & Buildings,
Bangor & Aroostook, Houlton, Me.

No satisfactory method has yet been found to overcome this condi-

tion. One of our brick station structures, that has a canopy overhanging the platform with downspouts running into our sewer system, has a steam connection from the heating plant hooked up to the downspouts so that steam can be carried to these downspouts to thaw out the ice. This method has not been very satisfactory.

We are in a climate where the snow is quite dry when it falls. This tends to eliminate the icing conditions that prevail in other parts of the country. Snow is removed from the roofs of our buildings by hand when the accumulation gets to a certain point.

Steam or Hot Water Safest

By C. O. SATHRE

Supervisor Bridges & Buildings, Chicago
& North Western, Madison, Wis.

In my opinion, the safest way to clean out downspouts filled with ice is to use steam or hot water applied with a hose directly to the outside of downspouts. When an opening has been effected through ice on the inside of the spout, this can be opened up completely by running warm or hot water through the inside. Of course, this method can be used at larger stations or terminals where warm water and steam facilities are available.

Where downspouts are secured to brick, concrete, or masonry buildings and on metal posts of platform canopies and where there is no danger of fire, the thawing can be accomplished by applying heat from a blow torch on low flame at the expense of future maintenance and repainting of the downspouts. This method should only be used as a last resort where it is positively essential to eliminate a safety hazard in as short a time as possible.

Downspouts on frame buildings can only be thawed and cleaned safely by removing them in sections. This can be done by side pressure at the joints, breaking the ice and then thawing them out on the ground and replacing. An alternative would be to drape them with burlap and saturate with hot water until thawed. This would require



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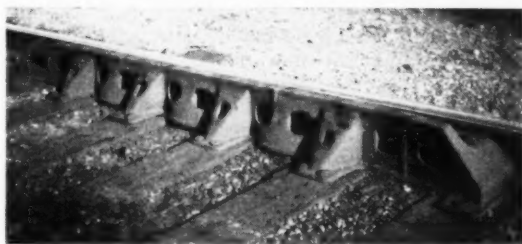
Small, light, inexpensive—towed by a motor car, the PB-B is the ideal burner for yard work—and in many cases better than larger burners for on-the-line work. Can be put on the job faster! (Three other Woolery burners in larger sizes available.)

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What's the Answer (Cont'd)

heating water in metal containers with torches.

Keeping downspouts open in winter months is costly, and we only attempt to do so when there is a definite safety-hazard problem. As a rule this occurs only at a few locations where the roof has southern exposure and thawing develops during mild weather. We have little trouble at other places and make no effort to open the downspouts. As a rule we find little damage to downspouts from freezing.

In regard to preventive measures, salt, of course, can be applied in eave troughs. This has a definite deteriorating effect on metal and is costly because of renewal and maintenance of eave troughs and downspouts. However, I have experimented by putting a $\frac{1}{2}$ to $\frac{3}{4}$ -in layer of calcium chloride in the eave troughs in areas where there is intermittent thawing and freezing. I find that this helps in keeping water from freezing.

There is also a chemical in pellet form known as "Ice Chaser" which is 30 times faster than salt in melting snow and ice and is not corrosive to metal or concrete. I intend to investigate this further.

"An Ounce of Prevention . . ."

By E. W. HODGKINS, JR.

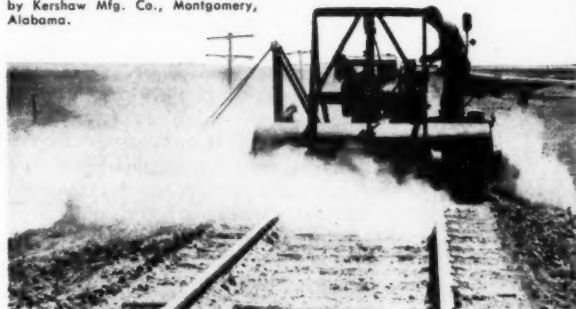
Assistant Engineer of Structures, Maine Central, Portland, Me.

The problem of gutters and their attendant downspouts is one that has vexed building-maintenance forces since people started to live in frame structures. In the northern latitudes, the problem is especially vexing due to snow and ice.

Once a downspout is filled with ice there is only one positive way of clearing it—the application of heat. If the building is in a terminal area, terminal steam can usually be used to clear the downspouts and gutters. At outlying locations this is impractical or impossible, especially since the demise of the steam engine on many railroads. The application of heat at these locations can be accomplished by use of a portable burner, of which there are many commercial types. However, care must be exercised in using these as well as the familiar blowtorch. This is done by keeping them moving over the downspout and heating a wide area. Concentrating

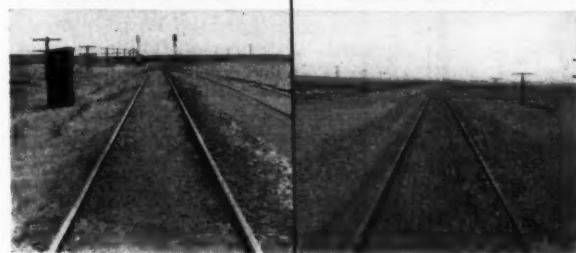
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Wisconsin-powered Track Broom, built
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Out in the plains states, dust sometimes is a serious problem. During a dust storm last year, powdery dry dust filled up between the rails, where it began to harden . . . as picture at left shows. The Kershaw Track Broom was successfully used to sweep out the dust between the rails. (See clean-swept section of track at right.)

A 4-cylinder Wisconsin Heavy-Duty Air-Cooled Engine provides the steady-going lugging power for track broom . . . a logical choice for these good reasons:

Every Wisconsin Engine, large or small, runs on thrust-absorbing tapered roller bearings at both ends of the crankshaft. Every Wisconsin offers efficient, fool-proof air-cooling at all seasons — from extreme sub-zero weather to 140° F. Trouble-free ignition is provided by an easily-serviced rotary type, high tension OUTSIDE magneto with impulse coupling, for fast starts in any weather.

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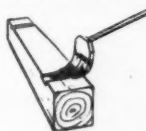
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What's the Answer (Cont'd)

the flame over a small area would quickly ruin the light metal.

Salt, of course, is the easiest solution to the problem, but not only does it melt the ice but also, in effect, the downspout thus requiring early spring renewals. Possibly painting the inside surface of gutters and downspouts with one of the anti-corrosion solutions, would retard corrosive action enough to

make it economical. In the final analysis, however, heat is the only positive solution to the problem.

The old adage: "An ounce of prevention is worth a pound of cure," was never so true as when applied to building downspouts. The location, kind and ease of maintenance of gutters and downspouts is a function of the original design of a building, based on research and common sense.

The roofs of many modern buildings drain into permanent downspouts inside of the building. These

downspouts (cast iron or tile) are built within the interior partitions and connected to the final drainage system. This uses the interior heat of the building to keep ice from forming. In such installations a strainer must be maintained over the inlet to prevent foreign material from gaining entrance and plugging the downspouts.

Buildings, both old and new, that are heated with steam or hot water can be fitted with a pipe, running along the gutter, just inside the building on the side of extreme exposure. This aids in melting snow and keeping ice from forming.

A commercial innovation is a strip of rubber or plastic, of varying lengths, into which resistance wires are embedded. This device is plugged into the regular household electrical outlet. It can be wrapped around downspouts or placed in gutters. The heat generated is reported to be enough to keep snow from accumulating or ice forming.

The location of downspouts is a highly important factor today if they are to be located on the outside of a building. Possibly 90 per cent of railroad buildings were built during the time of "Old Dobbin" and were surrounded with beautiful green grass plots. These grass plots have now given way to progress and provide parking areas for the automobile and/or unloading areas for trucks of all shapes and sizes. Trucks and truckers are less kindly to downspouts (and other accessible parts of buildings) than were "Old Dobbin" and his driver. Recognizing this, downspouts must be located so as to keep battering to a minimum.

Each time a spout is hit the light sheet metal pushes in and forms a dam which can restrict the flow and allow freezing to take place or worse still to cause leaves, sticks, paper, or other foreign matter to pile up with the same result.

This brings me to my last observation and recommendation which is the epitome of the old adage previously quoted. Gutters and downspouts must be kept clear in order for them to fulfill their function. Each fall thousands of leaves fall off trees around buildings, small sticks break off and fall, paper is blown around. Some of these find their way into gutters, successfully blocking or at least restricting them. Therefore, late in the fall, just before the first snowfall, gutters and downspouts on each building should be given a good cleaning out. This alone would improve their efficiency.

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SUBURBAN PROPANE GAS CORPORATION
WHIPPANY NEW JERSEY



The Gas Company Beyond the Gas Mains

Products of Manufacturers . . .

(Continued from page 66)



MODEL 100 of the new tractor line, shown here with weed mower attachment, is the smallest of the group.

WHEEL-TRACTOR LINE

THERE ARE four machines in a recently announced line of wheeled utility tractors introduced by International Harvester Company, Chicago. These provide a power range of 9.4 to 59.8 belt hp. Two of the machines are carbureted, one is diesel powered and the fourth is available with either a diesel or carbureted engine. Typical of the line is the model 300 tractor which delivers 39.5 maximum drawbar horsepower. A "torque-amplifier" drive is offered as optional equipment, which provides 10 forward (1.5 to 16.7 mph) speeds and 2 reverse speeds. It is reported that the tractor operator can change speed and boost pull power up to 45 per cent, on the go, without touching the clutch, throttle or shifting gears.

ROTARY COMPRESSOR

A NEW 210 cfm portable rotary compressor has been added to complete the line of "Blue Brute" compressors manufactured by Worthington Corporation, Harrison, N. J. The new line now includes 125, 210, 315 and 600-cfm sizes. The new compressor is a small-size lightweight unit which includes a newly designed clutch and a separate oil reservoir equipped with a pre-heater to improve cold-weather starting. All types of standard mountings are available in all Blue Brute sizes.

TRACK BROOM

KERSHAW Manufacturing Company, Inc., Montgomery, Ala., has announced a new model of the Kershaw track broom, known as the 1FBE. Among the improvements incorporated in the new model is a Continental model F-226 engine which increases the horsepower to 63. There is also a special adapter flange which provides direct coupling of the hy-



SELF-PROPELLED SPIKE PULLER

IMPROVEMENTS have been announced in the Fairmont W85 self-propelled hydraulic spike puller. This machine, a product of Fairmont Railway Motors, Inc., Fairmont, Minn., has been equipped with two pulling assemblies to enable it to pull spikes from both sides of the rail. The cylinders are controlled from a single

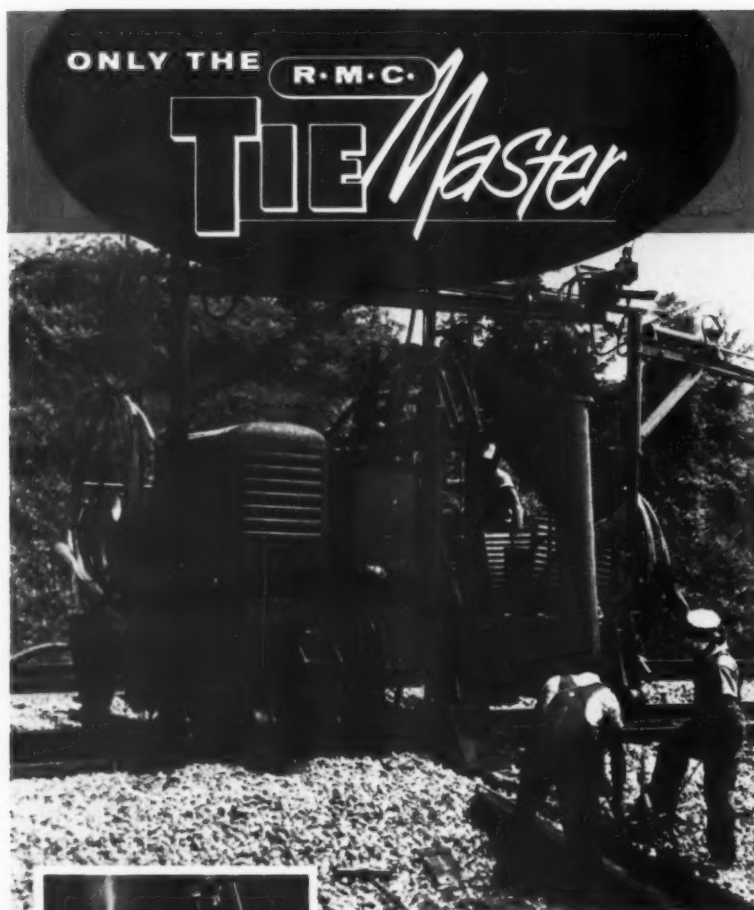
valve and operate at the same time. Both cylinders are mounted on a common, spring-counterbalanced, pantograph support to provide for easy raising and lowering. Each cylinder has its own longitudinal "track" to permit a limited amount of individual movement parallel with the rail. It is pointed out that this movement enables the operator to position the pulling jaws over the spikes without exact spotting of the machine.



draulic pumps to one side of the front of the engine. The machine has been equipped with 16-in. cast-steel, demountable wheels and 4-wheel hydraulic brakes with vacuum booster. The operator's position has been changed to provide better visibility and more comfort and a small canopy has been provided to protect him

from inclement weather conditions.

It is reported that maintenance on the hydraulic system has been reduced by replacing some of the hydraulic-hose assemblies with seamless-steel hydraulic tubing. The steel-cable brush has been redesigned to reduce cable breakage and facilitate maintenance of the brush wheel.



Close-up of ram with pushing plate in contact with tie to be removed. Ram scarifies the bed while pushing old tie out, then draws new tie into position on return stroke.

DOES THE COMPLETE TIE REPLACEMENT JOB

In one operating cycle a single TieMaster performs these four steps—raises the track, removes old tie, scarifies the bed, and inserts new tie. Only the TieMaster performs all of those essential tie replacement steps.

Machine replaces ties at an average speed of one per minute, with minimum disturbance to the bed. TieMaster requires only an operator and two laborers. When required ties can also be loaded and banded on dump trailer attached to machine.

Write for Bulletin T-55

Railway Maintenance Corporation

PITTSBURGH 30, PA.

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The Month's News Railway Personnel

General

C. B. Porter, assistant chief engineer Southern Region, on the Chesapeake & Ohio, at Richmond, Va., has been appointed assistant to vice president-construction and maintenance, with headquarters at Huntington, W. Va.

Engineering

R. E. Catlett, roadmaster on the Frisco at Ft. Smith, Ark., has been promoted to assistant division engineer, River division, with headquarters at Chaffee, Mo. Mr. Catlett replaces **C. A. Peebles** who has been transferred to Ft. Scott, Kan.

B. W. Blair, assistant chief engineer for the Canadian National at Moncton, N. B., has been promoted to regional chief engineer, Atlantic Region, with the same headquarters. Mr. Blair succeeds **G. R. Doull**, who has retired. **W. Lenco**, bridge engineer, replaces Mr. Blair. **R. J. Maugham**, assistant bridge engineer, Central Region, has been promoted to bridge engineer, Atlantic Region, replacing Mr. Lenco, with headquarters at Moncton. **D. A. Slack**, assistant division engineer at Campbellton, N. B., has been promoted to division engineer, Edmonton division, with headquarters at Edmonton, Alta. Mr. Slack succeeds **K. Vavasour**, who has been transferred.

Howard B. Beaumont, valuation engineer of the Western Maryland at Baltimore, Md., retired from active service on February 1. **Edward P. Wiseman**, has been appointed director of valuation with headquarters at Baltimore.

Charles Weiss, assistant engineer on the Pennsylvania at Chicago, has been appointed project engineer in the office of the vice-president research and development, with headquarters at Philadelphia, Pa.

L. E. Brault, supervisor of track of the Springfield division of the Illinois Central at Decatur, Ill., has been promoted to assistant to division engineer, Memphis Terminal, Memphis, Tenn., succeeding **L. W. Lang** who has retired.

Ralph L. McDaniel, division engineer on the Santa Fe at Fresno, Cal., has been promoted to district engineer on the road's Coast Lines, with headquarters at Los Angeles, replacing **R. E. Chambers**, who has retired. **Wilbur L. Seabridge**, division engineer at Galveston, Tex., succeeds Mr. McDaniel.

F. C. Cunningham, division engineer on the Chesapeake & Ohio, at Peru, Ind., has been transferred to Russell, Ky., and **D. F. Apple**, division engineer at Cov-

ington, Ky., has been appointed division engineer of the Cincinnati-Chicago division with headquarters at Covington and Peru. **H. B. Orr**, formerly assistant division engineer at Russell, has been promoted to division engineer at Clifton Forge, Va., replacing **C. L. Crummett**, whose promotion to general supervisor bridges and buildings is announced elsewhere in these columns.

As announced in the February issue of *RT&S* (p. 79), **Norman M. Cary**, supervisor bridges and buildings on the Southern at Greensboro, N. C., has been promoted to division engineer at Bristol, Va.

Mr. Cary was born August 13, 1918, at Richmond, Va., and entered railway service with the Southern as a B&B apprentice in June 1939. He subsequently served as B&B helper, rodman and student apprentice and was advanced to assistant supervisor in June 1944. In July of that year, he entered military service and returned to his position as assistant supervisor in November of 1946. He was later promoted to track supervisor at Greenwood, S. C., and also served in that capacity at Columbia, S. C. He was promoted to B&B supervisor at Greensboro in February 1951, which position he held until his recent promotion.

As announced in the February issue of *RT&S* (p. 79), **John W. McPherson**, track supervisor on the Southern at Charlottesville, Va., has been promoted to assistant division engineer at Greenville, S. C.

Mr. McPherson was born November 16, 1919, at Greenville and entered service with the Southern as a section laborer in June 1937, being promoted to apprentice foreman in December 1929. From December 1940 through September 1943, he served as rodman, relief section foreman, blueprinter, transitman and student apprentice. In October 1943, he was promoted to assistant track supervisor at Danville, Va. He was promoted to track supervisor at South Clarksville, Va., in July 1944 and was transferred to Keysville, Va., in April 1948 and to Charlottesville in July 1950.

As announced in the February issue of *RT&S* (p. 79), **H. C. Tunison**, assistant engineer maintenance of way on the Lehigh & New England, has been promoted to chief engineer with headquarters at Bethlehem, Pa.

Mr. Tunison was born in Passaic, N. J., September 2, 1904. He entered railway service with the Lehigh Valley in 1927 as an instrumentman and subsequently served as draftsman, inspector and bridge designer at New York and Bethlehem. In 1931 he left the railroad to complete his education and was graduated from Lafayette College in 1933. Between the years 1933 and 1935 he was employed by the Pennsylvania and North Carolina Highway Departments, returning to the Lehigh Valley in 1935 as a bridge designer at Bethlehem. From 1936 to 1940 he was employed by the Lehigh & New England as an inspector, draftsman and supervisor and was promoted to assistant engineer maintenance of way in 1940 which position he held until his recent promotion.

D. L. Jerman, assistant chief engineer

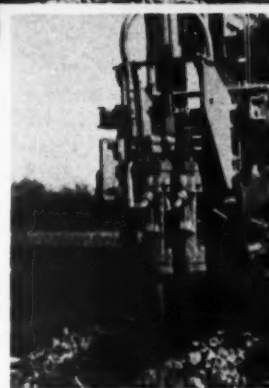


REDUCES SPIKE DRIVING COSTS SO DRAMATICALLY

Here is the means to substantial savings in spike driving costs in tie replacement and laying new rail. SpikeMaster nips the tie up firmly against the rails, then drives four spikes—one on either side of both rails.

With a speed of better than six ties per minute, the SpikeMaster uses only an operator and laborers for setting spikes in the tie plates.

Machine can be used with either rail or anchor spikes. It drives spikes only in a straight line and can be used on pre-bored or non-bored ties.



While two sets of nipping tongs hold tie firmly against the base of the rails, four pneumatic guns drive spikes. Guns are adjustable for all standard tie plate punching and spikes cannot be over-driven.

Write for Bulletin S-55

Railway Maintenance Corporation

PITTSBURGH 30, PA.

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Railway Personnel (Cont'd)

of the Pittsburgh & West Virginia, has been promoted to chief engineer with headquarters at Pittsburgh, Pa. Mr. Jerman succeeds F. L. Riddle, who has asked to be relieved of the responsibilities of that position. Mr. Riddle has consented, however, to act as consulting engineer.

Mr. Jerman was born on February 28, 1923, at Sewickley, Pa., and obtained his education from Lehigh University. He began his railroad service with the Pitts-

burgh & West Virginia on March 22, 1954, as assistant chief engineer which position he held until his recent promotion.

Mr. Riddle was born on December 27, 1889, at Columbus, Ohio, and obtained his engineering education at Ohio State University. He began his railroad service with the Pennsylvania and joined the Pittsburgh & West Virginia on April 3, 1923, serving in various engineering capacities with the road until his appointment as chief engineer in 1941.

Alexander M. Pepper whose promotion to assistant bridge engineer, West-

ern Region, on the Canadian National at Winnipeg, Man., was announced recently (*RT&S*, Jan., p. 61), was born at Manitou, Man., and graduated from the University of Manitoba as a civil engineer in 1926. He entered railroad service with the Canadian National at Winnipeg as an inspector in the engineering department and subsequently served as instrumentman, resident engineer, and assistant engineer until 1952, when he was promoted to structural designer which position he held until his recent promotion.

As announced in the February issue of *RT&S* (p. 79), H. E. Jones has retired as chief engineer of the Lehigh & New England at Bethlehem, Pa.

Mr. Jones was born in Terryville, Conn., May 22, 1890. He graduated from Lafayette College with a degree in civil engineering in 1915 and entered railway service with the Central of New Jersey in April 1916 as a transitman at Allentown, Pa. Later that year he went with the Lehigh Valley as transitman at Buffalo, N. Y. He served in the Signal Corps during World War I and after the war was employed by firms outside the railroad industry. In 1920, he entered the service of the Lehigh & New England as a transitman and was promoted to track supervisor in March 1926. He was appointed assistant engineer maintenance of way in 1936 and was advanced to engineer maintenance of way in 1939.

S. J. Owens, assistant to the chief engineer of the Chicago, Burlington & Quincy, has been appointed chief engineer of the Minneapolis & St. Louis, succeeding C. S. Weatherill, who has been appointed to the newly created position of consulting engineer. Mr. Owens is a native of Bensenville, Ill., and grad-



S. J. Owens

uated from Michigan State College in 1931. He joined the CB&Q in 1934 as a rodman and subsequently served as instrumentman, assistant roadmaster, roadmaster, assistant engineer and division engineer. In 1953, he was promoted to district engineer at Omaha, Neb., and was advanced to assistant to the chief engineer in January 1955 which position he held until his recent appointment.

Mr. Weatherill was born at Newburg, Minn., August 26, 1891. He began his

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- hold gage
- prolong tie life
- save maintenance



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LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven, or removed, with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Tie plates are held against horizontal and vertical movement under spring pressure. Play between the spike and the hole is eliminated—gage is held and plate cutting is overcome.

LOCK SPIKES not only become integral with the tie plate, but also the lateral pressure by the legs against the sides of the tie hole, binds the spike in the tie. This unique feature gives tight adhesion between tie and plate.

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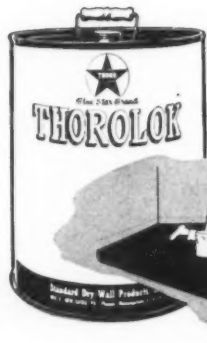
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Railway Personnel (Cont'd)

railway service with the Minneapolis & St. Louis in 1916 following his graduation from the University of Minnesota. He was advanced to assistant engineer in 1917 and subsequently held positions of supervisor of track, supervisor of bridges and buildings, division engineer and engineer maintenance of way. He was promoted to chief engineer in April 1949, which position he held until his recent appointment.

J. Floyd Beaver, chief engineer maintenance of way and structures on the Southern at Charlotte, N. C., has been appointed assistant chief engineer at Washington, D. C., succeeding Edgar Bennett, who has retired. John A. Rust, superintendent at Greenville, S. C., replaces Mr. Beaver. R. A. Williams has been appointed assistant engineer at Charlotte.

H. E. Weatherly has been appointed division engineer, San Antonio division, on the Texas & New Orleans with headquarters at El Paso, Tex. J. N. Fuller has been promoted to division engineer, Dallas and Austin divisions, with headquarters at Ennis, Tex. Mr. Fuller succeeds A. P. Reese who has been transferred to Austin, Tex., as assistant division engineer.

Mr. Fuller, born on November 7, 1899, at Minneapolis, Minn., attended Rice Institute. He began his railway service on June 3, 1919, on the Texas & New Orleans at Houston, Tex., as a rodman and subsequently held positions as estimator-draftsman, engineer-accountant, assistant engineer and office engineer. On February 1, 1942, he was appointed roadmaster at Austin, Tex. During World War II he served as a captain in the Military Railway Service in North Africa and Italy. On December 1, 1945, he returned to the railroad as roadmaster at Austin and was advanced to senior assistant engineer in April 1947. Later he was advanced to principal assistant engineer in the office of the chief engineer at Houston. He was appointed assistant division engineer on March 1, 1954, at Austin, which position he held until his recent promotion.

Richard W. Bailey, who has been promoted to division engineer on the Chicago & North Western at Huron, S. D., (RT&S, Dec., p. 80) was born on February 24, 1920, at Peoria, Ill., and was graduated from the University of Illinois in 1942 with a BS degree in mechanical engineering. He entered the service of the North Western in September 1946 as a draftsman in the office of the chief engineer at Chicago. In 1947, he was promoted to instrument man, Galena division, with headquarters at Chicago and was later promoted to supervisor scales and work equipment. He was advanced to acting division engineer in 1955 on the Wisconsin division with headquarters at Chicago, which position he held until his recent promotion.

A. G. Smith, who has been appointed division engineer of the Winnipeg division of the Soo Line, with headquarters at Thief River Falls, Minn. (RT&S, Jan.



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and labor approve the
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Railway Track and Structures



Railway Personnel (Cont'd)

p. 58), was born on August 7, 1917, at Minneapolis, Minn., and studied at the University of Minnesota School of Mines. Mr. Smith entered railway service in October 1941 as a chainman on the Chicago, Milwaukee, St. Paul & Pacific and



A. G. Smith

subsequently served as rodman and instrumentman. In April 1946, he joined the Soo Line as assistant engineer at Thief River Falls, and was promoted to

assistant division engineer at Stevens Point, Wis., in October 1953 which position he held until his recent promotion to division engineer.

Reginald Hugo, whose promotion to bridge engineer, Western Region, on the Canadian National at Winnipeg, Man., was announced recently (*RT&S, Jan., p. 61*), was born in East Moulsey, Surrey,



Reginald Hugo

Eng. He came to Winnipeg as a boy, where he completed his education, graduating from the University of Manitoba as a civil engineer in 1917. He

entered railroad service with the Canadian National in March 1919 as a draftsman in the bridge engineer's office at Winnipeg and subsequently held the positions of designing engineer, assistant engineer and resident engineer. He was promoted to assistant bridge engineer in July 1950 which position he held until his recent promotion.

Harry M. Williamson, assistant engineer maintenance of way and structures for the Southern Pacific at San Francisco, Cal., has been promoted to engineer maintenance of way and structures at that point, succeeding **R. W. Putnam** who has been granted a leave of absence pending retirement. **Godfrey J. Lyon**, division engineer at Portland, Ore., replaces Mr. Williamson. **Carl T. Ray**, division engineer at Ogden, Utah, succeeds Mr. Lyon. **Alan D. DeMoss** has been appointed division engineer replacing Mr. Ray. **Curtis S. Conner** has been appointed senior assistant division engineer with headquarters at Sparks, Nev. **Jack E. Newby** has been appointed soils engineer of the road with headquarters at San Francisco.

Mr. Williamson was born at Pocatello, Ida., June 12, 1914. He attended Stanford University, and graduated from the University of Utah in 1936. He began his railway service on the Southern Pacific in June 1933 with the engineering department, working during the summer

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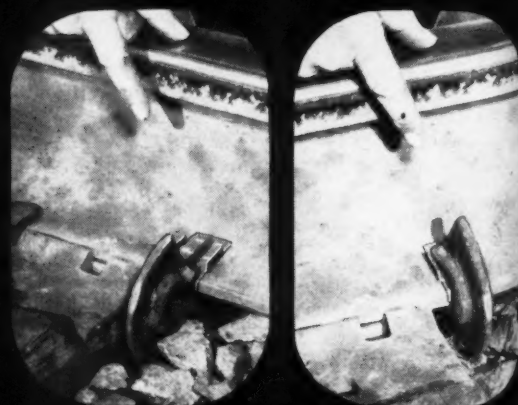
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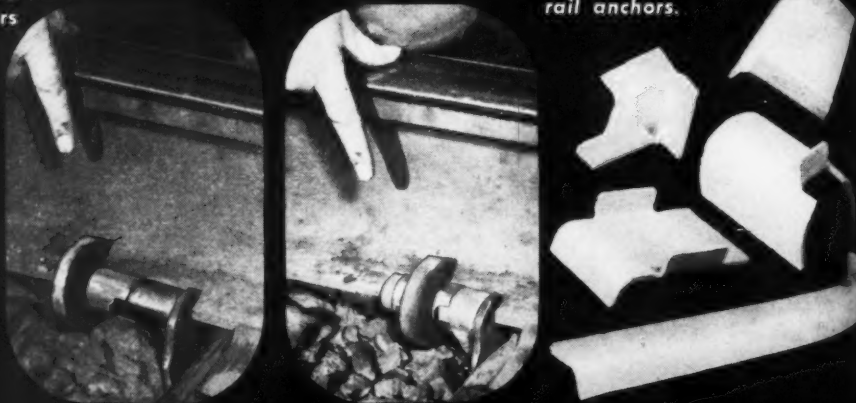
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Above, left: TELEWELD Anchor Shim in position with Fair anchor ready for driving. Right: Anchor is driven back onto rail with TELEWELD Anchor Shim making tight fit.

Below: TELEWELD Anchor Shim in position with Ericson anchor before (left) and after (right) driving for a tight fit to rail.



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PROTEK-TIE protects cross and switch ties against weather deterioration.

NOX-RUST TIE SEAL retards mechanical wear between tie plate and tie. Prevents rust on bottom of tie plate; waterproofs and toughens the surface of tie.

NOX-RUST 506 for protection of superstructures of steel bridges and buildings. Highly resistant to sulphureous fumes, weather, acids and alkalis and also to brine from refrigerator cars, salt air and other corrosive elements. A one-coat job; no primer needed. Economical to use.

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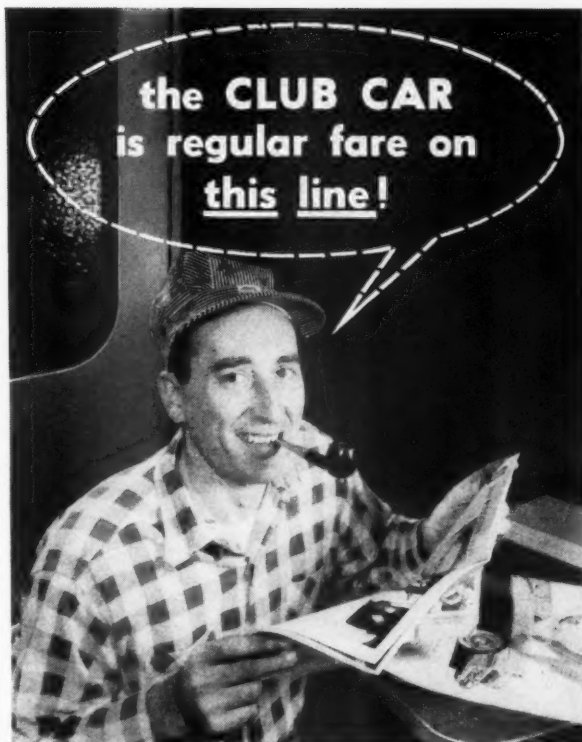
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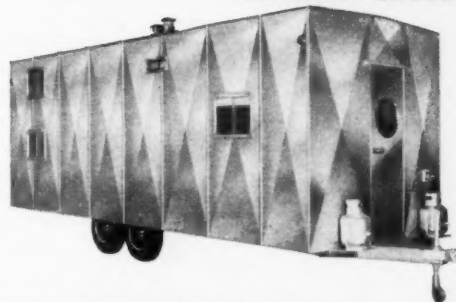


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BUFFALO 12, N. Y.

Railway Personnel (Cont'd)

months. After graduation he was permanently employed by the road in an engineering capacity until January 1940 at which time he obtained a leave of absence to attend the Harvard Graduate School of Business. In September 1940,



Harry M. Williamson

he was made appropriation clerk in the road's general offices, returning to the engineering department in September 1941. He was advanced to assistant division engineer of the Portland division in October 1942. After serving nearly three years in the navy during World War II, he returned to the road in May 1945 and subsequently held the positions of assistant division engineer, senior assistant division engineer, division engineer and assistant engineer maintenance of way and structures. He was holding the latter position at the time of his recent promotion.

Mr. Lyon was born at Los Angeles, Cal., October 1, 1911, and graduated from the University of California in 1935 with a degree in engineering. He entered the service of the Southern Pacific in June 1935 as a rodman and subsequently held positions as draftsman, instrumentman, inspector and assistant engineer at various points until he entered military service where he spent nearly four years in the engineering corps. Mr. Lyon re-

turned to the Southern Pacific in 1946 as assistant engineer and was advanced to assistant trainmaster the following year. He was promoted to assistant division engineer in 1948 at El Paso, Tex., ad-



Godfrey J. Lyon

vancing to senior assistant division engineer at Portland, Ore., in 1949 and to assistant construction engineer at San Francisco in 1951. He returned to Portland as division engineer in 1953.

B. E. Crumpler, who has been appointed to the newly created position of assistant to chief engineer of the Norfolk



B. E. Crumpler

& Western, with headquarters at Roanoke, Va. (RT&S, Jan. p. 58), was born at Blue-

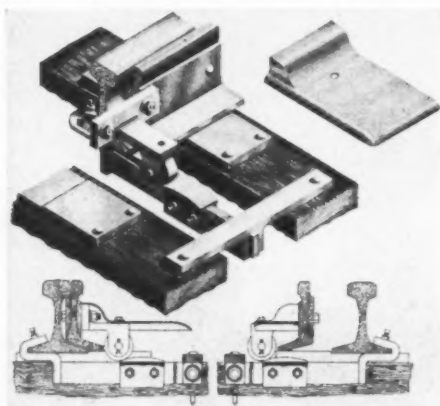
field, W. Va., and attended the University of West Virginia. Mr. Crumpler entered railroad service in January 1926 as a draftsman on the Norfolk & Western and subsequently served as transitman. He was promoted to maintenance engineer in 1942 and was appointed assistant engineer of the Norfolk, Shenandoah & Radford divisions in December 1945, later being transferred to the Pocahontas division where he was located at the time of his recent promotion.

L. R. Radochonsky, instrumentman of the Illinois Central, has been promoted to assistant to division engineer with headquarters at Chicago, succeeding R. A. Pasternak who has been promoted to assistant engineer in the chief engineer's office at that point. Mr. Pasternak is a native of Chicago and graduated in 1947 from the University of Illinois with a BS degree in civil engineering. He entered railway service with the Illinois Central in June of that year as a junior engineering aide at McComb, Miss., and was later transferred to Carbondale, Ill. He was promoted to instrumentman at Vicksburg,



R. A. Pasternak

Miss., in August 1949, was advanced to senior instrumentman at that point in August 1951 and was transferred to Waterloo, Iowa, in November 1952. In August 1953, he was promoted to assistant to division engineer at Chicago which position he held until his most recent appointment.



GRAY-WADE Railway Switch Point Roller

More than 900 Gray-Wade sets are now in use on representative roads. Note these important advantages:

- Reduces the energy required to operate the switch—50 to 75%.
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58 YEAR OLD BRIDGE TIES

**Still good because
they are DRY on this
COVERED Railroad Bridge**



BIRD TIE PADS protect the ties even more effectively than a covered bridge

The above bridge on the St. Johnsbury and Lamoille County Railroad near Swanton, Vermont was built in 1898. The original *untreated fir ties, without tie plates*, are still in excellent condition. They are good for a great many more years of service as shown in the close-up insert.

Light traffic? Not at all . . . heavy shipping of limestone, talc, and pulpwood results in approximately 25 year bridge tie life on this road's standard type bridges (uncovered, treated ties, and tie plates) — a little longer than on the largest and heaviest tonnage American railroads.

These ties are still good after 58 years because they were protected from sun and rain. The reason for covering is simple. The truss framework of a

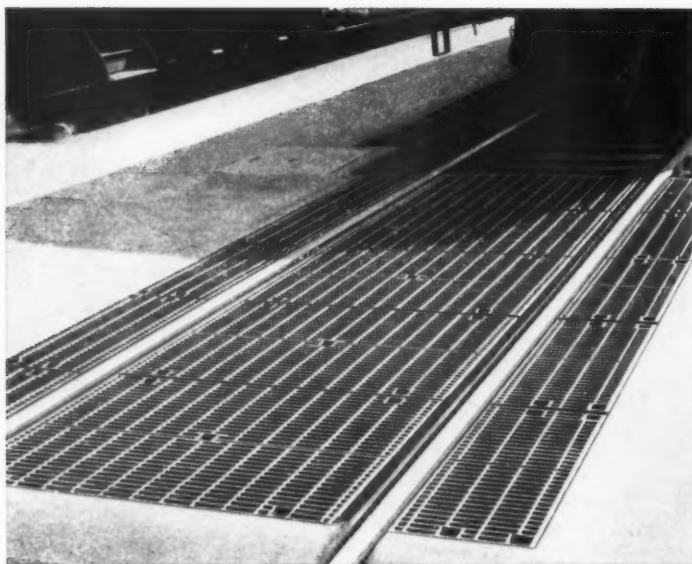
wooden bridge and the bridge ties—exposed to the weather—will quickly rot and warp. Covering the trusses and putting on a roof gives the bridge a life expectancy of 50 to 75 years rather than just a decade.

Bird Tie Pads protect the under plate area of ties even more effectively than this covered bridge has. The same tight tacky seal that keeps the wood dry also eliminates both plate motion and abrasives, and consequently mechanical wear. Furthermore, the spike hole wood is kept dry and sound, keeping spikes tight and helping greatly in holding gauge and line. Write to address below, Dept. HTS-3, for full details.

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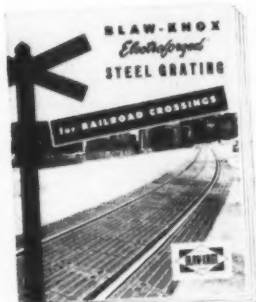
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RAILROAD GRATING APPLICATIONS: crossings • walkways • running boards • steps • tower platforms • exhaust fan guards • battery box shelves

Railway Personnel (Cont'd)

T. F. Burris, who has been appointed chief engineer, Southern Region of the Chesapeake & Ohio with headquarters at Richmond, Va. (RT&S, Feb. p. 78), was born on July 27, 1899, at Sault Ste. Marie, Mich. He attended Michigan State University, graduating in 1924 with a BS degree in civil engineering. He began his railroad service with the Pere Marquette, now part of the Chesapeake & Ohio, in 1928 as an instrumentman at



T. F. Burris

Saginaw, Mich. He was promoted in 1929 to assistant engineer at Grand Rapids, Mich., and was advanced in 1943 to division engineer at that point. In 1951 he was appointed assistant chief engineer, Pere Marquette district with headquarters at Detroit, Mich., and was promoted to chief engineer, Northern region, later that year. He held this latter position until his recent appointment as chief engineer of the road's Southern region.

Bernard J. Minetti, engineer of structures on the Jersey Central, has been promoted to assistant chief engineer with



Bernard J. Minetti

headquarters at Jersey City, N. J. Mr. Minetti was born on March 28, 1906, at New York and graduated from Brooklyn Polytechnic Institute in 1927 with a BS degree in civil engineering. He began his railroad service with the Pennsylvania in May 1929 as a bridge designer at New

York and later that year joined the New York Central in this same capacity. While serving with the NYC he obtained a leave of absence in order to return to Brooklyn Polytechnic Institute for graduate study. In June 1941 returned to that road as an assistant engineer. In February 1942, he joined the Jersey Central as a structural draftsman and subsequently held positions as assistant engineer, assistant bridge engineer, bridge engineer and engineer of structures. He was holding the latter position at the time of his promotion to assistant chief engineer.

Track

D. H. Peterson, extra gang roadmaster on the Chicago, Milwaukee, St. Paul & Pacific, has been promoted to roadmaster, Coast division, with headquarters at Tacoma, Wash. Mr. Peterson replaces **C. W. Porter** who has retired.

As announced in the February issue of *RT&S* (p. 80), **Fred H. Radford**, assistant track supervisor on the Southern at Charlotte, N. C., has been promoted to track supervisor at Batesburg, S. C.

Mr. Radford was born at Newbridge, N. C., on May 28, 1927, and began his service with the Southern as a rodman at Charlotte in December 1952. He subsequently served as a transitman and student apprentice at this location and

was promoted to assistant track supervisor at Charlotte in June 1955 which position he held until his recent promotion.

As announced in the February issue of *RT&S* (p. 80), **A. Marvin Jones**, assistant track supervisor on the Southern at Helena, Ga., has been promoted to track supervisor at Jesup, Ga.

Mr. Jones was born at Cochran, Ga., on February 28, 1908. He entered railway service with the Southern on June 20, 1925, as a section laborer at Cochran and was promoted to section foreman at McDonough, Ga., in October 1941. He was advanced to assistant track supervisor at Helena, Ga., in January 1954 which position he held until his recent promotion.

Bridge & Building

C. L. Crummett, division engineer on the Chesapeake & Ohio at Clifton Forge, Va., has been appointed general supervisor bridges and buildings, with headquarters at Richmond, Va.

J. A. Latimer has been appointed assistant general foreman bridges and buildings—water service on the Frisco, with headquarters at Springfield, Mo.

Warren J. Hopson, whose appointment as bridge and building master on the Delaware & Hudson at Colonie, N. Y.,

was announced recently (*RT&S*, Feb. p. 81), was born on September 2, 1899, at Whitehall, N. Y. In 1916 he entered railway service with the Delaware & Hudson as a carpenter helper. In 1926, he became a carpenter foreman at Green Island, N. Y., and in 1951, he was advanced to general foreman at Colonie. Mr. Hopson was promoted to bridge and building supervisor at that point in May 1952, which position he held until his recent appointment.

Frank Ryan, whose appointment as general foreman bridges and buildings on the Delaware, Lackawanna & Western at Hoboken, N. J., was announced recently (*RT&S*, Feb. p. 81), was born on March 22, 1899, at Newburgh, N. Y. After a public school education, he entered railway service with the Delaware, Lackawanna & Western on December 4, 1924, as a water service mechanic. On April 1, 1934, he became an assistant foreman, and was advanced to foreman later that same year. Mr. Ryan was promoted to assistant general foreman bridges and buildings on April 1, 1945, which position he held until his recent promotion.

Special

J. E. Lynch has been appointed supervisor of roadway machines and equipment on the Chesapeake & Ohio with head-

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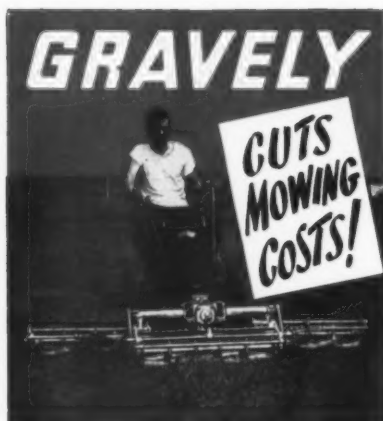
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GRAVELY TRACTORS, INC.

Railway Personnel (Cont'd)

quarters at Grand Rapids, Mich. W. J. Peters and C. I. Estler have been appointed respectively, supervisor and assistant supervisor of roadway machines and equipment, with headquarters at Saginaw, Mich.

Association News

Maintenance of Way Club of Chicago

The March meeting of the club, which will be held on the 26th at the Hamilton Hotel, Chicago, will be addressed by H. B. Christianson, Jr., assistant chief engineer, Rock Island, who will speak on the subject "New Trains and The Tracks."

The program of the February meeting, held on the 27th, consisted of a panel discussion on "Trends in M/W Organizations." Panelists were E. L. Anderson, chief engineer of the Frisco; H. W. Kellogg, engineer of track, Chesapeake & Ohio; and Edward Wise, Jr., engineer maintenance of way, Louisville & Nashville.

Northwest Maintenance of Way Club

The club will hold its March meeting on the 22nd at the Midway Civic Club, 1931 University Avenue, St. Paul, Minn. The program will consist of two moving pictures produced by Ingersoll-Rand Company. Their titles: "The Long Street," and "The Break Through." H. S. Knight, supervisor work equipment, Northern Pacific, will be program chairman for the evening.

Supply Trade News

General

Armco Drainage & Metal Products, Inc., has announced that its office at St. Louis, Mo., has been moved to 10 S. Brentwood Blvd., St. Louis 5.

The Rockwell Manufacturing Company has acquired the assets of Locomotive Finished Materials Company, Atchison, Kan. The company will continue under its present management as a major division of Rockwell.

A \$16 million expansion program has been announced by Air Reduction Sales Company, Inc. Three new producing plants, at Chicago, Alton, Ill., and Calvert City, Ky., are scheduled for completion this

year. Additional producing facilities will be installed at Butler, Pa., and the output will be increased at Riverton, N. J. A portion of the appropriation will be for expansion of gas producing facilities in the Southwest, and for additional distribution facilities throughout the country.

Personal

J. W. Kenefic, superintendent railroad service, Western region, Air Reduction Sales Company, at Chicago, has retired. R. L. Rex, superintendent railroad service, Eastern region, has been appointed superintendent railroad service, railroad department, with headquarters as before in New York.

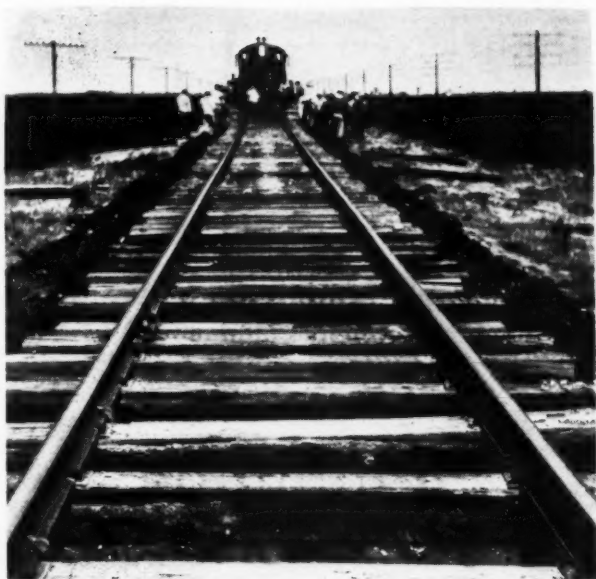
M. R. Waller, formerly assistant sales manager, Railroad Accessories Corporation, has been appointed sales engineer for the New York district.

Effective March 1, W. D. Brooks, export manager for Fairmont Railway Motors, Inc., Fairmont Minn. and formerly also district manager of the Northwest district, began devoting his time exclusively to the export division with the same headquarters. Effective the same date, Frank G. Simmons was appointed district manager of the Northwest district, with headquarters at St. Paul, Minn., and Roger W. Stenzel, was transferred from the Chicago district office to the Northwest district office at St. Paul.

R. H. Devine, assistant sales manager of the Koppers Wood Preserving Division, has been appointed assistant manager, Eastern district, with headquarters at Wilmington, Del. Mr. Devine, in addition



Leo L. Schmucker, who has been promoted to assistant general manager of Sperry Rail Service, Danbury, Conn. Mr. Schmucker is a native of Arkansas and received his college degree in Switzerland. He subsequently attended Western Illinois State College, Arkansas State College and St. Louis University. He joined Sperry Rail Service in 1942 as an assistant operator on one of the company's 17 induction-type detector cars and successively held positions as chief operator, operating field supervisor and operating manager.



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...with a proven sled-plow team!



EXISTING BALLAST UTILIZED for initial raise. Pulled along beneath track, *Ballast Sled* skeletonizes, redistributes crib material, gives a 3½ in. raise.



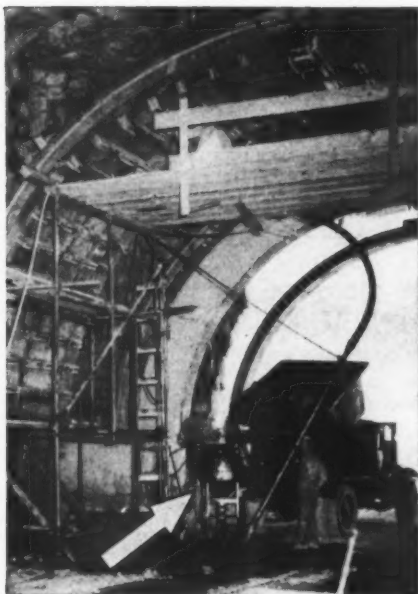
FOULED BALLAST REMOVED. One pass of *Ballast Plow* under track deposits fouled crib material on shoulders. Track, now skeletonized, settles on original bed.

Skeletonizing . . . raising . . . renewing ballast and ties . . . every phase of rehabilitation is done faster and cheaper with this job-proven Mannix Sled/Plow team. **Faster** because the sled or plow work the direct method — underneath the track — redistributing or clearing ballast as they skeletonize. **Cheaper** because they do their work in one-third the time required by hand labor. Cost of renting this equipment and utilizing the service of a Mannix-trained sled engineer is more than offset by the time and cost savings effected. Write, phone, or wire for detailed information — and show a clear profit on your current track rehabilitation program.

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by placing concrete rapidly through openings in suspended forms. The equipment on this job was lighter and resulted in considerable savings in construction time, as compared with cast-in-place lining. Construction story ENR Dec. 22, 1955.

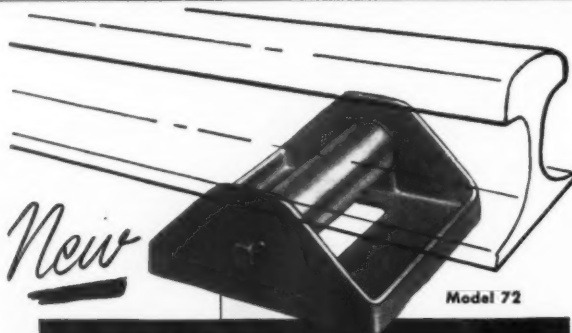
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• The Rail Dolly is a heavy-duty roller mounted on a low metal stand. Used in pairs, Rail DOLLIES handle the heaviest of bumping rails—make accurate bumping possible with less men. Cut damage to rail ends. Far safer than swinging rails with tongs or sliding on greased plates. Guides on each side of Dolly stand prevent rail from slipping off; cleats in base anchor Dolly firmly on top of ties or ballast. Another aid in driving rail, the Simplex Rail Puller and Expander, prevents rail from returning to its original position after bumping. Both devices described in Bulletin RR 72. WRITE:

TEMPLETON-KENLY & CO.

2543 Gardner Road, Broadview, Ill.

Supply Trade News (Cont'd)

to his new duties, will retain responsibility for Eastern district railroad accounts. **J. W. Sullivan**, manager of the Colorado district, has been named assistant sales manager of the division with jurisdiction over both railroad and commercial fields. The Colorado district has been integrated with the Texarkana district, under the supervision of **S. S. Curtis**, district manager.

Allen L. Tilsley, whose appointment as assistant general manager of railroad sales, **Colorado Fuel & Iron Corp.**, Denver, Colo., was announced recently (*RT&S*, Feb. p. 84), was born in 1918 at Trenton, Neb. He attended the University



Allen L. Tilsley

of Denver and graduated with a degree in business administration. Mr. Tilsley has been affiliated with the railroad sales department of the Colorado Fuel & Iron Corp. since 1940.



K. R. Chandler, who has been appointed service manager for the **Koehring Company**, Milwaukee, Wis. Mr. Chandler graduated from the University of Wisconsin in 1945 with a degree in engineering and joined the Koehring Company's engineering staff in 1948. He transferred to sales work in 1950 and was named West Coast District representative in 1952. In November 1954, he came to Milwaukee as a member of the service department.

TRACK ACCESSORIES

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ANGLE SPLICE BARS

ANGLE BARS for OLD RAILS

PLAIN SPLICE BARS

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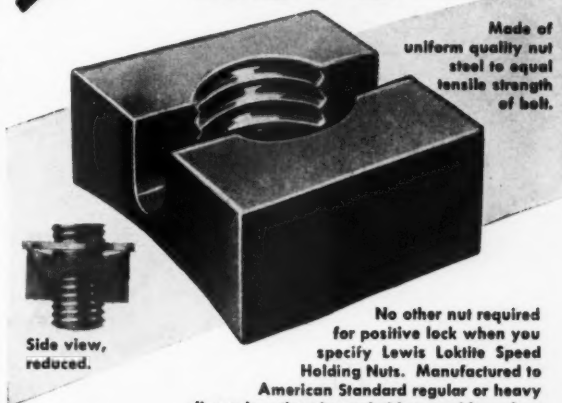
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PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
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Manufacturers' Literature

Following is a compilation of free literature, pamphlets and data sheets offered by manufacturers to the railroad industry. Circle the number(s) on the coupon below to receive the desired information. Requested items will be sent direct by manufacturers.

1. **PRESERVATIVE TREATMENT.** *Chapman Chemical.* Illustrated bulletin describes three types of above-ground and ground-line treatment using Pentachlorophenol preservative compounds.
2. **TRACTOR ATTACHMENTS.** *Caterpillar Tractor.* 8-page booklet (DE 584) "Caterpillar Attachments Provide . . ." describes new attachments for Caterpillar-built Tractors and Motor Graders; includes hydraulic steering boosters. (Available also on special request in Spanish, French and Portuguese).
3. **EXCAVATOR-CRANE.** *Bucyrus-Erie.* Bulletin (15-B-4) describes and illustrates the Bucyrus-Erie 15-B; includes specifications, working ranges.
4. **AIR COMPRESSORS.** *Worthington.* 28-page bulletin (1210-B1A) describes, illustrates, gives specifications and dimensions on portable Blue Brute air compressor line; includes stationary compressors, rock drills, contractor's tools.
5. **CRANE.** *Kochring Co.* 8-page pictorial bulletin describes mechanical and application features of Self-Propelled 205 Rail-Aid; includes on-the-job photos and typical on and off-track applications.
6. **SWITCH STANDS.** *Bethlehem Steel.* 48-page catalog (389) "Bethlehem Switch Stands, Standard and Narrow Gauge" illustrates and discusses the story of each of the models; includes specifications and diagrams.
7. **CRANE & EXCAVATOR.** *Schild Bantam.* 4-page illustrated bulletin (CR-501) describes new Self-Propelled Model CR-35 Bantam Power Crane and Excavator; contains specifications, features, operating data, capacities.
8. **TRACK SPECIALTIES.** *Ramapo Ajax Div.* 20-page condensed catalog "Track Specialties For Safety and Economy" carries useful data on crossings, frogs, switch stands, lubricators, snow blowers, tie pads, tie plate anchor studs.
9. **GRATING & STAIR TREADS.** *Klemp Metal Grating.* Brochure contains illustrated report on usage of Steel, Aluminum, and Stainless Grating and Stair Treads, discusses various types of electro-forged welded grating, offers dimensional sketches and data on riveted grating.
10. **WOOD ROOF TRUSS.** *Timber Engineering.* 3rd edition "Typical Designs of Timber Structures" with 102 typical designs illustrates suggested methods of applying Teco timber connector system in wood framing (for roof trusses, bridges, towers, buildings).
11. **ARC WELDING.** *Lincoln Electric.* 8-page bulletin (1343) "Now You Can Select The Ideal Arc For Every Job" describes and illustrates Lincoln Idealarc; shows typical applications.
12. **EXPLOSIVES.** *Atlas Powder.* Revised 4-page list of instructions and warnings (2272) "Prevention of Accidents in The Use of Explosives" gives proper handling and use of explosives and blasting supplies; lists 72 "Do's and Don'ts" to be observed while transporting, storing, handling, loading or tamping explosives.
13. **BLOWERS.** *Industrial Plastic Fabricators.* File-folder type bulletin (102) contains 8 data sheets with technical specifications on IPF line of Un-plasticized Rigid Polyvinyl Chloride Centrifugal Blowers.
14. **RUBBER HOSE.** *Hose Accessories.* 4-page colorful bulletin (105) from Le-Hi Div. contains complete data on steel, malleable iron and brass hose couplings and nipples for industrial rubber hose.
15. **HOSES, FITTINGS, COUPLINGS.** *Aeroquip.* 64-page Industrial Catalog (200) covers full range of Aeroquip products (hoses, fittings, couplings, adapters); illustrated, contains complete engineering data.
16. **AIR TOOLS.** *Aro Equipment.* 40-page catalog (62) features complete line of Aro air tools, air hoists, automation tools; includes descriptions, features, handy reference data.
17. **ADHESIVES, COATINGS, SEALERS.** *Minnesota Mining & Mfg.* 12-page illustrated catalog "Adhesives, Coatings, Sealers" lists properties and applications of wide variety of these items.
18. **FLUIDS & LUBRICANTS.** *Carbide & Carbon Chemicals.* 52-page booklet (6500D) describes, illustrates, gives properties, applications, characteristics of Ucon synthetic fluids and lubricants.
19. **EYE PROTECTION.** *Watchmokat Optical.* 12-page bulletin (200) describes Watchmokat line of eye savers; includes illustrations, specifications, advantages of optical plastics.
20. **ACID-RESISTANT APPAREL.** *Worklon, Inc.* 16-page reference manual (1956 Catalog) describes, illustrates, lists prices of "Acid and Caustic Resistant Industrial Apparel of Orlon and Dynel by Worklon."

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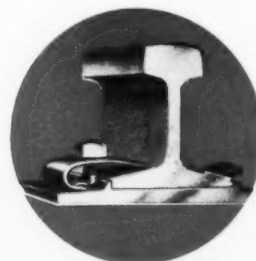
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